

✓ 3379

Family Myctophidae

Body oblong or tapering behind, more or less compressed. Caudal peduncle deep or slender. Head usually short, compressed. Snout usually short, blunt, obtuse. Eye large, often increases in size with age. Mouth large, jaws usually equal or lower on slightly protruding. Premaxillaries mostly long. Maxillary well developed, slender or expanded terminally. Teeth villiform, in bands in jaws, on palatines, pterygoids and tongue. Gill rakers lanceolate, seldom rudimentary.

Gill membranes separate, free.

Pseudobranchiae well developed.

Branchiostegals 8 to 10. Air bladder small. Intestine short. Body covered with cycloid scales, sometimes spinescent. Caudal base scaly, sometimes most of fins scaly. Lateral line usually developed, complete, sometimes scales in its course enlarged. Luminous spots, or photophores, usually regularly or definitely arranged along lower sides of head and body - as 2 or

air bladder small.

3 supraanals, 1 or 2 mediolaterals
and precaudals, always 2 to 4.

Dorsal fin entirely before anal,
overlapping little or none. Adipose
fin developed. Caudal forked or
deeply emarginate. Pectoral well
developed. Ventral with 8 rays,
below or slightly advanced from
dorsal origin.

Small fishes of the open seas,
usually found far from shore.

They usually live in deep water,
moving to the surface at night.

Some species are solitary, others social, as they have been found in large schools or several hundred individuals at one time.

Their food is largely crustacea, though they also devour smaller or larval fishes. Lernean copepods are also found on some species, though rather infrequently.

Sexual dimorphism occurs with respect to the supracaudal and infracaudal luminous bodies or plates, the former with respect

to the male and the latter the female. Exceptions to this condition have been reported, as sometimes they are absent and again both supracaudal and infracaudal plates may be developed in one individual.

Many writers use a system of abbreviations or the combination of certain letters to designate the various photophores. This is a method often confusing and however laudible in condensing the letterpress is surely

painful in application. For this reason I have written out all the designations for the photophores (see accompanying figure).

~~Rare has listed the numerous species apparently~~

The following species described by Günther in 1879 were all later referred by him (1887) to the *Xenoberyces*:

Scopelus mizolepis.

Scopelus crassiceps.

Scopelus macrostoma.

Scopelus microps.

The following nominal forms are
so imperfectly noticed that their
allocation
proper generic is not possible:

Scopelus tenuicauda Steindachner 1867

Scopelus langerhansi Johnson, Proc.
Zool. Soc. London, 1890, p. 454. Madeira.

Parr has listed the nominal species,
apparently belonging to this genus,
which are so incompletely described

Scopelus bericoides BorodinScopelus bericoides Borodin, Proc.New England Zool. Club, vol. 10, Jan. 22,
1929, p. 110. N. $41^{\circ}30'$ W. $45^{\circ}57'$, 800 fathoms.Depth $6\frac{1}{2}$; head $5\frac{1}{3}$, cavernous.Snout $5\frac{2}{5}$ in head, blunt; eye $3\frac{3}{8}$;
mouth cleft short not reaching eye;
teeth feeble. 7 or 8 transversely.Scales 50 (traces) in lateral line,
mandible with 9 luminous spots;
no luminous spots on body.

D. 10; A. 22; pectoral 10; ventral 9.

Length 142 mm. (Borodin.)

North Atlantic.

3387

Analysis of Genera

- a. Luminous organs present, usually as photophores.
b. Myctophinae. Photophores in distinct and defined arrangement.

c. Supracaudal and infracaudal luminous bodies, when present as series of defined scales.

d. Precaudal photophores 2.

Myctophum

d.² Precaudal photophores always more than 2.

e. Antorbital luminous organs not conspicuously enlarged; supracaudal and infracaudal luminous organs present.

Lampranctus

e.² Antorbital luminous organ conspicuously enlarged; supracaudal and infracaudal luminous organs rarely present.

Diaphus

3388

c.² Large undivided median supracaudal and infracaudal luminous plate in place of several normal scales.

Lampadena.

b.² Neoscopelinae. Single photophore beneath each scale over entire body or on lower surfaces of body, not arranged in distinct and definite series.

f.¹ Photophores only on lower or ventral portion of body. Neoscopelus.

f.² Single photophore beneath each scale of entire body. Scopelopsis.

a.² Scopelenginae. No luminous organs or photophores present. Scopelengys.

Genus Myctophum Rafinesque

Myctophum Rafinesque, ~~Indice Ittol.~~
~~Siciliana~~, 1810, p. 56. Type Myctophum

punctatum Rafinesque, monotypic.

Myctophus Cocco, Giorn. Sci. Lett. Sicilia,
vol. 24, no. 77, 1829, p. 44. Type Myctophum

punctatum Rafinesque.

Myctophus Cocco, Nuovi Ann. Sci. Nat.

Bologna, vol. 2, 1838, p. 180. Type Myctophum

punctatum Rafinesque.

Scopelus Cuvier, Règne Animal, vol. 2, 1817,
p. 56. Type Gasteropelecus humboldti

Risso, designated by Goode and Bean,
Oceanic Ichth., 1895, p. 70.

3390

Alysia (not) Lowe, Proc. Zool.
Soc. London, 1839, p. 87. Type Alysia
loricata Lowe, monotypic.

Dasy Scopelus Günther, Cat. Fishes Brit.
Mus., vol. 5, 1864, p. 405. Type Myctophum
asperum Richardson, designated by Goode
and Bean, Oceanic Ichth., 1895, p. 91.

Tarletonbeania Eigenmann and Eigenmann,
Proc. California Acad. Sci., vol. 4, 1890, p.
7. Type Tarletonbeania tenua Eigenmann
and Eigenmann, monotypic.

Rhinoscopus Lütken, Vidensk. Selsk.
Skrift. Nat. Kjöbenhavn, ser. 6, vol. 7,
1892, p. 236. Type Scopelus coco Coco.

Benthosema Goode and Bean, Oceanic
Ichth., 1895, p. 76. Type Salmo mulleri
Gmelin, orthotypic.

Electrona Goode and Bean, Oceanic
Ichth., 1895, p. 91. Type Scopelus rissoi
Cocco, orthotypic.

Centrobranchus Fowler, Proc. Acad. Nat.
Sci. Philadelphia, 1903, p. 754. Type
Centrobranchus choerocephalus Fowler,
 monotypic.

Loweina Fowler, Amer. Mus. Novitates,
 no. 162, March 31, 1925, p. 2. Type Scopelus
 (Rhinoscopelus) rarus Lütken, orthotypic.

3392

Antorbital luminous organs
not especially enlarged. Orbital
photophores small. Pectorals, ventrals
and anal photophores all nearly at
same level, rarely penultimate
pectoral or second ventral elevated
from plane of series. Anals in 1 or
2 groups. Precaudals always 7,
usually well separated from last
posteroanals, rarely continuous.
Photophores without black dividing
septum. No luminous scales. Luminous
supracaudal and infracaudal plates,
seldom both present in one individual.
Dorsal fin shorter than anal fin.

Analysis of species

- a.¹ Four photophores well above lateral line, 1 at front end of dorsal fin base, 1 at hind end of same (uppermost supraanal), 1 at base of adipose fin (superior posterolateral) and 1 at caudal base (last precaudal). valdiviae.
- a.² No photophores above lateral line.
- b.¹ Posterolateral absent; anteroanal in 1 single continuous group; only 2 precaudals, both on same level; suprascapular at or below pectoral fin base.
- c.¹ Lens of eyes excentric, dorsal; eyes more or less approach telescopic; scales cycloid.
- d.¹ First 2 supraanals and 2 precaudals separated from each other by conspicuously wide interspaces; head 4 ~~in length~~; anals 18. parallelum.

d.² First 2 supraanals and 2 precaudals normally spaced; head $3\frac{1}{3}$; anals 15 or 16. arcticum.

c.² Eyes normal.

e.¹ Head $2\frac{1}{2}$ to 3; eyes 2 or less; scales cycloid. risso.

e.² Head 3 to $3\frac{2}{5}$; eyes $2\frac{3}{5}$ to 3; anals at same level. tenisoni.

e.³ Head over $3\frac{1}{2}$; eye $2\frac{1}{2}$ or more.

f.¹ Two front anteroanals elevated; scales cycloid. anderssoni.

f.² Front anteroanals not elevated.

g.¹ Anal origin below middle of dorsal; scales cycloid. antarcticum.

g.² Anal origin below hind end of dorsal base; scales ctenoid. subasperum.

3395

b.² One posterolateral photophore; anals
in 2 separate groups.

g.¹ Two ventrals (rarely 4);
suprapectoral lower than pectoral
fin origin; 3 supraanals (rarely
2); lateral line present; first
subpectoral before second subpectoral;
anals 6 to 8 + 5 to 7; intervals between
second, third and fourth pectoral
shorter than those between first
and second and fourth and fifth
pectorals. interruptum.

g.² Six ventrals; suprapectoral
above pectoral base; lateral
line obsolete; scales ctenoid; anals
10 or 11 + 4. crenulare.

g.³ Five ventrals; scales ctenoid;
supraanals in straight series.
cuvieri.

g.⁴ Four ventrals.

h.¹ Only 2 supraanals; suprapectoral lower than pectoral fin origin; second ventral not elevated; first subpectoral behind second pectoral; interval between third and fourth pectorals shorter than between second and third and between fourth and fifth pectorals; anals 6 or 7 + 5 or 6. rare.

h.² Three supraanals; suprapectoral always above pectoral base.

i.¹ Second ventral spot more or less elevated.

j.¹ Suborbital organ present. imitator.

j.² No suborbital organs.

k.¹ First supraanal in line with supraventral and second supraanal; supraanals broadly angulate.

l.¹ Supraventral half as far ³³⁹⁷
from lateral line as from
ventral bases; ^{anals 5 or 6 + 3 to 5.} pterotum.

l.² Supraventral midway between
lateral line and ventral
bases or nearer latter; anals
5 to 7 + 5 to 8. glacialis.

ls.² First supraanal lower than
second, much lower than
supraventral, far below line
between these 2 spots.

m.¹ Second precaudal well
below lateral line, scarcely
elevated; anals 5 to 7 + 2 to 4.
laternatum.

m.² Second precaudal in
lateral line; anals 5 to 7 +
4 to 6. fibulatum.

i.² Second ventral spot in line
with rest of series.

n.¹ Snout prominent, more or less pointed; tail very slender; anal fin much longer than dorsal; hind anals more numerous than anterior (4 to 8 + 7 to 14).

o.¹ Gill rakers long; supraanals broadly angulate. cocco.

o.² Gill rakers very short; supraanals very broadly angulate or in nearly straight line.

f.¹ Eye $3\frac{1}{2}$ to $3\frac{2}{3}$.

f.² Eye $3\frac{3}{4}$ to 4. nigro-ocellatum.

andreae.

n.² Snout not prominent; Tail deeper.

g.¹ Scales spinous (ctenoid).

3399
r.¹ Anals 6 to 8 + 2 to 4.
(9 to 11); eye $2\frac{4}{5}$;
gill rakers 4 + 15;
depth $3\frac{4}{5}$; supraanals
nearly straight; depth
 $3\frac{1}{2}$. orientalis.

r.² Anals 6 to 8 + 3 to 5
(10 to 12); eye less $2\frac{3}{5}$;
head $3\frac{3}{5}$; depth $4\frac{1}{4}$;
gill rakers? + 17;
supraanals straight or
but slightly angulate.

pristilepis.
r.³ Anals 6 to 8 + 5 to 7
(11 to 15); head $3\frac{2}{3}$ to $4\frac{1}{3}$;
gill rakers 5 + 10 or 11;
supraanals distinctly
angulate; depth $4\frac{1}{3}$.

asperum.
r.⁴ Anals 6 to 8 + 5 to 8 (12
to 15); eye $2\frac{2}{5}$ to $3\frac{1}{5}$; depth
4 to $4\frac{1}{3}$; head $3\frac{1}{2}$ to 4;
gill rakers 7 + 16;
supraanals straight.

spinosum.

3400
g.² Scales smooth (cycloid).

s.¹ Supraanals sharply angulate; first on same level as second, nearly in line with supraventral, rather than last (superior) supraanal; not over 11 anteroanals.

t.¹ Anals 7+8 to 11; front supraanal below supraventral; 6 to 8 luminous plates above or below caudal peduncle; last 3 or 4 posteroanals above anal base; gill rakers 6+19.

californiense.

t.² Anals 7 to 9+4 to 9 (12 to 17); 1 or 2 small luminous scales above or below caudal peduncle; first 3 or 4 posteroanals above anal base; front supraanals level with supraventral above or slightly before second ventral; eye 3 to 3 $\frac{3}{5}$.

3401

head $3\frac{2}{5}$ to 4. humboldti.
t.³ Anals 7 to 9 + 4 to 6 (11 to 15);
eye 4; front supraanal
lower than ventral, far
advanced, above or slightly
behind second ventral;
hind anals entirely behind
anals.

evermanni.

t.⁴ Anals 8 or 9 + 5 to 7; last
anal ray base between
first and second hind
anal; front supraanal
above or slightly before
third ventral. trifinium.

s.² Front supraanal lower than
second and much lower than
ventral; 2 lower supraanals
on more nearly straight line
with uppermost than with
supraventral.

u. Anals 10 + 6 (7); 45
to 47 scales; Anal fin
23 or 24; second precaudal
somewhat elevated,
nearer first precaudal

than lateral line. 3402

aurolaternatum.

u.² Anals 7 to 10 + 3 to 7
(10 to 16); 36 to 40 scales;
Anal fin 18 to 20; second
precaudal well before
lateral line, nearer bases
of lower caudal rays than
first precaudal. affine.

u.³ Anals 7 to 9 + 7 to 11 (14 to 20);
42 to 45 scales; Anal fin
18 to 22; second precaudal
somewhat elevated, well
below lateral line.

punctatum.

u.⁴ Anals 6 to 8 + 7 to 9 (13 to 17);
38 scales; Anal fin 20 or 21;
2 precaudals far apart,
posterior in or close to
lateral line. phengodes.

h.³ Three supraanals; suprapectoral
below pectoral base; anals 6 + 6.

parvimanum.

3403

b.¹ Two posterolaterals; anals always in 2 separate groups.

v.¹ Supraventral far below lateral line.

w.¹ Last precaudal midway between lateral line and ventral profile of tail or lower; anal 4 to 6 + 6 to 8. benoitii.

w.² Last precaudal in or close to lateral line.

x.¹ First supraanal above or slightly behind second ventral; supraventral, first and second supraanals in line; anals 6 to 8 + 6 to 8. reinhardtii.

x.² First supraanal over third ventral; supraventral usually well above line through first and second supraanals; anals 4 to 6 + 4 to 7. macrocheir.

v.² Supraventral at or close to lateral line. hygomi.

3404

Myctophum valdiviae Brauer

Myctophum valdiviae Brauer, Zool.
Anzeiger, vol. 28, ^{nr. 10,} 1904, ⁽³⁹¹⁾ p. 398, fig. 6.

Atlantic and Indian Oceans.

— Gilbert, Mem. Carnegie Mus., vol. 6, no. 2,

1913, p. 84 (south of Kagoshima, to 300 fathoms).

— Taaning, Vidensk. Medd. Dansk. Naturh. Foren. København, vol. 86, 1928, p. 57, ^(diagnosis in key)

— Parr, Bull. Bingham Oceanogr. Collection,

vol. 3, art. 3, Dec. 1928, p. 57 (compiled).

Myctophum (Myctophum) valdiviae Brauer, Deutsch.

Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906,

p. 206, text fig. 127 (N. $24^{\circ}43'4''$ W. $17^{\circ}1'3''$,

south of Canaries; N. $5^{\circ}5'3''$ W. $13^{\circ}27'5''$,

Gulf of Guinea; N. $1^{\circ}27'8''$ W. $10^{\circ}16'5''$;

N. $1^{\circ}51'$ E. $0^{\circ}31'2''$; N. $2^{\circ}36'5''$ E. $3^{\circ}27'5''$;

S. $1^{\circ}56'7''$ E. $7^{\circ}40'5''$; S. $26^{\circ}49'2''$ E. 5°

$54'$, off South west Africa; $S. 31^{\circ} 46'$
 $4'' E. 84^{\circ} 55' 7''$, north of New Amsterdam;
 $S. 10^{\circ} 8' 2'' E. 97^{\circ} 14' 9''$, north of Cocos;
 $N. 7^{\circ} 43' 2'' E. 88^{\circ} 44' 9''$, Bay of Bengal;
 $N. 7^{\circ} 1' 2'' E. 85^{\circ} 56' 5''$; $N. 4^{\circ} 56' E. 78^{\circ} 15'$
 $3''$, between Ceylon and Chagos; $N. 2^{\circ} 29'$
 $9'' E. 76^{\circ} 47'$; $S. 4^{\circ} 5' 8'' E. 73^{\circ} 24' 8''$;
 $S. 6^{\circ} 19' 3'' E. 73^{\circ} 18' 9''$; $S. 2^{\circ} 43' 8'' E. 61^{\circ}$
 $12' 6''$, between Chagos and Seychelles;
 $S. 3^{\circ} 24' 6'' E. 58^{\circ} 38' 1''$; $S. 3^{\circ} 26' 2'' E. 58^{\circ} 34' 2''$;
 $S. 8^{\circ} 34' 8'' E. 53^{\circ} 42' 8''$, between Seychelles
and Zanzibar; $S. 4^{\circ} 38' 6'' E. 51^{\circ} 16' 6''$; $N. 4^{\circ}$
 $36' 1'' E. 48^{\circ} 37' 6''$, off north east Africa;

N. $9^{\circ}6'1''$ E. $53^{\circ}41'2''$; N. $13^{\circ}2'8''$ E. $46^{\circ}41'6''$, Gulf of Aden). — Tappenheim,
Deutsch. Südpolar Exped., vol. 15, Zool.
Jht. 7, 1914, p. 194 (S. $11^{\circ}19'$ W. $18^{\circ}34'$, 1200
meters; S. $26^{\circ}59'$ W. $17^{\circ}6'$, 1340 meters; S.
 $8^{\circ}43'$ W. $11^{\circ}55'$, 3000 meters; N. $5^{\circ}27'$ W.
 $21^{\circ}41'$, 800 meters; N. $17^{\circ}28'$ W. $29^{\circ}42'$,
3000 meters). — Taaning, Rep. Danish
Oceanogr. Exped., no. 5, vol. 2, A. 7, 1918,
p. 151, fig. 47 (Atlantic).

Depth $5\frac{1}{2}$; head $3\frac{1}{4}$, width $2\frac{1}{4}$.

Snout $4\frac{4}{5}$ in head; eye $5\frac{3}{5}$, $1\frac{1}{5}$ in snout, $1\frac{1}{5}$ in interorbital; maxillary reaches far behind eye but not to inclined hind preopercle edge, slender, length $1\frac{1}{2}$ in head; interorbital $4\frac{1}{2}$.

Gill rakers $5? + 10?$, lanceolate, little greater than gill filaments or $1\frac{1}{2}$ in eye.

Scales all fallen, but from pockets estimated about $28?$ in lateral line.

On back 2 photophores, first close below front of dorsal fin, second close behind base of dorsal fin and though none evident below adipose fin base; single antorbital superiorly; 1 opercular

little above hind end of maxillary and behind preopercle edge; most of other photophores obsolete or lost.

D. origin much nearer snout tip than caudal base, about 6 branched rays; A. begins opposite first third of dorsal base; least depth of caudal peduncle 3 in head; pectoral nearly reaches opposite dorsal origin and $1\frac{3}{4}$ in head; ventral $2\frac{3}{4}$.

Uniform brownish, fins paler.

Atlantic, Indian and Pacific Oceans.

This species has somewhat the aspect of *Lampanyctus* about the head. The elevated photophores close along the edge

3408

of the back, one before and another
behind the dorsal fin, as well as
one below the adipose fin distinguishes
it from the other species of the genus.

south of Kagoshima).

14669 U.S.N.M. N. $30^{\circ}34'$ E. $129^{\circ}22'$,
In 200 fathoms. Albatross Collection 4920.
Length 24 mm.

Myctophum parallelum Lönberg

Myctophum parallelum Lönberg, Zool.
Anzeiger, vol. 28, 1904, p. 764. S. 48°

27' W. 47° 36', 2500 meters; Wiss.

Ergebn. Schwed. Südpolar-Exped.; vol. 5,

pt. 6, 1905, p. 62 (type).

— Parr, Bull. Bingham Oceanogr. Collection,
vol. 3, art. 3, 1928, p. 57 (diag. in key).

— Horman, Discovery Rep., vol. 2, 1930, p.
320 (S. 35° 18' W. 19° 01' 10", 1000 meters;

S. 33° 07' 40" E. 4° 30' 20", 2000 meters; S.

33° 20' to 33° 46' E. 15° 18' to 15° 08', 2500 meters;

S. 33° 20' to 33° 46' E. 15° 18' to 15° 08', 2000 to 2500

meters; S. 33° 50' to 34° 13' E. 16° 04' to 15° 49';

350 to 400 meters).

Myctophum (Myctophum) parallelum
Brauer, Deutsch. Tiefsee Exped. Valdivia,
 vol. 5, Tiefsee - Fische, 1906, p. 174, fig. 86
 (compiled).

Depth ^{$3\frac{1}{2}$ to} 4; head ^{$3\frac{1}{5}$ to $3\frac{1}{4}$} Snout $4\frac{2}{5}$ in
 head; eye $2\frac{1}{5}$ ^{to $2\frac{1}{2}$} , greatly exceeds snout;
 maxillary reaches opposite hind
 eye edge, broadly expanded;
 interorbital very narrow, $\frac{1}{10}$ of eye.
 → suprapectoral photophore on lower
 part of pectoral base near anterior
 subpectoral; 2 subpectorals, close,
 side by side, below pectoral fin
 base; ^{photophores} 5 pectorals, all level; 4
 ventrals, second scarcely elevated;

~~In~~supraventral, nearer ventral fin than lateral line; anals 15 to 18, in almost straight line, last 4 behind anal fin base; 3 supraanals, interspace between first and second greater than that between second and third, forms very obtuse angle; precaudals well separated. Two large infracaudal luminous plates; nearer caudal than anal.

D. 14; A. 22. Length 42 mm., without caudal. (Lönnberg, Norman.)

Atlantic and Antarctic Oceans.

Myctophum arcticum (Lütken) ³⁴¹²

Scopelus arcticus Lütken, Kon. Dansk.
Vidensk. Selsk. Skrift. Kjöbenhavn,
ser. 6, vol. 7, 1892, p. 249, fig. 6. Mouth

of Davis Strait. — Holt and Byrne,
Dep. Agric. Techn. Instruct. Ireland,
Sci. Invest. 1910, no. 6 (1911), p. 12,
fig. 2 (outline)

1 (off west of Ireland, 602 to 630
fathoms).

Benthosema arcticum Goode and Bean,
Oceanic Ichth., 1895, p. 78 (compiled).

Myctophum arcticum Brauer, Zool.
Anzeiger, vol. 28, 1904, p. 387 (diagnosis
in key). — Taaning, Rep. Danish Oceanogr.
Exped. Medet., no. 5, 1918, p. 151, fig. 48
(Atlantic); Vidensk. medd. Dansk naturh.

Foren. København, vol. 86, 1928, p. 52
(diagnosis in key). — Parr, Bull.
Bingham Oceanogr. Collection, vol. 3, art. 3,
1928, p. 57 (compiled).

Myctophum (Myctophum) arcticum Brauer,
Deutsch. Tiefsee Exp. Valdivia, vol. 15,
Tiefsee-Fische, 1906, p. 173, fig. 85 (Arctic
Ocean; Davis Strait, Greenland).

Depth $3 \frac{2}{5}$; head $3 \frac{1}{8}$. Snout
 $6 \frac{1}{3}$ in head from snout tip; eye
 $2 \frac{4}{5}$, greatly exceeds snout; maxillary
extends slightly behind eye, expansion
 $1 \frac{3}{4}$ in eye, length $1 \frac{3}{5}$ in head
from snout tip; interorbital low.

Scales cycloid, 38 in lateral line.

3414

Small antorbital photophore
at lower front eye edge, perhaps
also small one at upper front eye
edge; 2 operculars, upper larger
and level with upper hind maxillary
edge; 3 branchiostegals; 5 pectorals,
third interspace shortest; 3 subpectorals,
first 2 at same level with lower
opercular and first above second
pectoral, third higher and close
before lowest pectoral rays; 4
ventrals, equidistant; 1 supraventral,
over ventral base little before

43

3 | 129
12

first ventral; 15 or 16 anals, ³⁴¹⁵
last 5 behind anal fin base;
3 supraanals, first over and little
behind third ventral level with
supraventral, second but slightly
higher and behind last ventral,
third midway between and slightly
advanced from first anal and
its distance to lateral line; 2
precaudals, close, above lower
rudimentary caudal rays.

^{Plumbeous}
Infracaudal plates 3.

D. III, 9, first branched ray

$1\frac{2}{3}$ in total head length;
adipose fin over last anal ray,
length 3; A. III, 18, first branched
ray 2; caudal $1\frac{1}{3}$, well emarginate;
least depth of caudal peduncle 3;
pectoral $1\frac{2}{3}$; ventral $2\frac{1}{10}$.

Length 34.5 mm. (Brauer.)

Arctic Ocean, Davis Strait.

Myctophum risso (Cocco)

Scopelus risso Cocco, Giorn. Sci. Lett.
Arti Sicil., Palermo, vol. 77, 1829, pp.
15, 144, pl. 2, fig. 5. Messina. — Bonaparte,
Fauna Italia, Pesc. 3, pt. 1, fasc. 27,
1840, description, pl., fig. 5 (Italy);
Cat. Met. Pesc. Europ., 1846, p. 36
(Mediterranean).

Scopelus rissoi Valenciennes, Hist. Nat.
Pois., vol. 22, 1849, p. 446 (compiled). —
Günther, Cat. Fishes Brit. Mus., vol. 5,
1864, p. 405 (Mediterranean, Messina,
Madeira). — Canestrini, Fauna Italia,

Perci, pt. 3, 1874, p. 123 (Sicily). —

Carus, Prodr. Faun. medit., vol. 2, 1893,
p. 562 (compiled). — Lütken, Kon. Dansk.

Vidensk. Selsk. Skrift. København,
ser. 6, vol. 7, 1892, p. 248, fig. 5

(Mediterranean). — Collett, Rés. Camp. Sci.

Monaco, vol. 10, 1896, p. 113 (N. $43^{\circ}24'50''$
north east of
W. $21^{\circ}40'45''$, Azores).

Electrona rissoi Goode and Bean,

Oceanic Ichth., 1895, p. 91, pl. 28, fig.

107 (Italy). — McCulloch, Biolog. Res.

Endeavour, vol. 3, pt. 3, April 21, 1915,

p. 104 (between Gabo Island and Cape

Everard, Victoria, 200 to 250 fathoms.
Electrona risso Fowler, Proc. Acad.
Nat. Sci. Philadelphia, 1911 (1912), p.
570 (Bonaparte material).

Myctophum rissoi Branner, Zool. Anzeiger,
vol. 28, Nr. 10, Dec. 20, 1904, p. 387
(diagnosis in key). — Janning, Rep.
Danish Oceanogr. Exped., No. 5, vol. 2, A. 7,
1918, p. 28, figs. 9-10 (Mediterranean;
Atlantic); Vidensk. Medd. Dansk
Naturh. Foren. København, vol. 86, 1928,
p. 52 (diagnosis in key). — Parr, Bull.
Bingham Oceanogr. Collection, vol. 3,

art. 3, Dec. 1928, p. 58 (compiled). —

Horman, Discovery Rep., vol. 2, 1930, p.
320 (S. $33^{\circ} 53' 45''$ E. $9^{\circ} 26' 30''$, 1000 meters;

S. $33^{\circ} 50'$ to $34^{\circ} 13'$ E. $16^{\circ} 4'$ to $15^{\circ} 49'$, 350

to 400 meters; S. $2^{\circ} 43' 30''$ W. $00^{\circ} 56' 30''$,

125 to 175 meters).

Myctophum risso (Cocco)

Scopelus risso Cocco, Giorn. Sci. Lett. Arti
Sci. Palermo, vol. 77, 1829, pp. 15, 144, pl. 2,
fig. 5. Messina.

Electrona rissoi Goode and Bean, Oceanic
Ichth., 1895, p. 91, pl. 28, fig. 107 (Italy).

— McCulloch, Biolog. Res. Endeavour,
vol. 3, pt. 3, April 21, 1915, p. 104 (between
Gabo Island and Cape Everard, Victoria,
in 200 to 250 fathoms).

(Scopelus rissoi Valenciennes, Hist. Nat. Poiss.,
vol. 22, 1849, p. 446 (compiled)).

— Günther, Cat. Fishes Brit. Mus., vol.
5, 1864, p. 405 (Mediterranean, Messina,
Madeira). — Carus, Prodr. Faun. Medit., vol. 2,
1893, p. 562 (compiled).

Myctophum (Myctophum) rissoi Brauer,
 Deutsch. Tiefsee Exped. Valdivia, vol. 15,
 Tiefsee-Fische, 1906, p. 170, text fig. 83
 (N. $0^{\circ}25'8''$ E. $7^{\circ}0'3''$, 2000 meters, ^{Gulf of Guinea}; S. $4^{\circ}38'6''$
 E. $51^{\circ}16'6''$, 2000 meters, between Seychelles
 and Zanzibar). — Zugmayer, Rés. Camp.
 Sci. Monaco, vol. 35, 1911, p. 21 (N. $43^{\circ}4'30''$
 W. $19^{\circ}42'$, between Azores and Portugal).
 — Murray and Hjort, The Depths of
 the Ocean, 1912, p. 613 (off Morocco,
 Azores; 3239 meters).

Myctophum benoiti reinhardtii Weber,
Siboga Exped., vol. 57, Fische, 1913, p.
86 (Molucca Passage; Halmahera Sea;
Banda Sea; in 1000 to 1500 meters).

Myctophum benoiti var. reinhardtii
Weber and Beaufort, Fishes Indo
 Austral. Archipelago, vol. 2, 1913, p. 155,
fig. 60 (photophores) (Weber's materials).

Myctophum (Myctophum) benoiti var.
reinhardtii Barnard, Ann. South African
Mus., vol. 21, pt. 1, June 1925, p. 242 (off
Cape Point and south of Agulhas Banks,
to 200 fathoms).

Myctophum atratum Carman, Mem. Mus.
Comp. Zool., vol. 24, 1899, p. 268. L. Lat. $25^{\circ}26'$
 $15''$ W. Long. $109^{\circ}48'$, in 1218 fathoms (west coast Mexico).

3422

Depth $2\frac{4}{5}$ to 3; head $2\frac{3}{5}$ to $2\frac{2}{3}$, width 2. Snout 6 to $6\frac{1}{4}$ in head from snout tip; eye 2 to $2\frac{1}{4}$, much greater than snout or interorbital; maxillary reaches opposite hind eye edge though not quite to hind or vertical preopercle edge, expansion $2\frac{2}{5}$ to 3 in eye, length $1\frac{3}{5}$ to $1\frac{2}{3}$ in head from snout tip; interorbital $3\frac{1}{2}$ to $4\frac{1}{2}$, nearly level. Gill rakers $9+23$, lanceolate, slender, $1\frac{1}{3}$ in eye, 3 times gill filaments.

Scales 28 or 29 in lateral line, greatly enlarged or equal about $\frac{1}{3}$ body depth; 3 above, 3 below, 12 or 13 predorsal to occiput. Caudal and ventrals at

3423

least scaly ventrally. Scales with 7 or 8 basal radiating striae; ciculi fine, obsolete apically.

Two minute antorbital photophores, one superior and one inferior along front eye edge; 2 operculars, upper larger and well elevated or on line with lower eye edge and upper subpectoral; 3 equidistant veiled branchiostegals; 5 pectorals, last interspace shortest; 1 suprapectoral, small and more or less veiled by gill covers, little before middle of pectoral fin base over lower subpectoral; 2 subpectorals, lower midway to little nearer upper than second pectoral, upper

52
2 105

close below bases of lowest pectoral rays; 4 ventrals, first interspace longest; 1 supraventral at lowest third in space between lateral line and ventral base; 10 to 12 anals, last 2 behind anal fin base; 2 precaudals, close, low and posterior slightly higher. Male with 1 or 2 supracaudal luminous scales, female with 2 or 3 infracaudal.

D. III, 9, I or III, 10, I, first branched ray $1\frac{2}{3}$ to $1\frac{3}{4}$ in total head length; adipose fin $3\frac{1}{3}$ to $3\frac{2}{3}$; A. III, 13, I to III, 15, I, first branched ray 2 to $2\frac{1}{4}$; caudal $1\frac{1}{5}$? to $1\frac{1}{4}$, forked; least depth of caudal peduncle $2\frac{3}{4}$ to $3\frac{1}{5}$; pectoral

Sta. D. 5176. Escarceo Light, S. 57°
E., 7 miles ($13^{\circ} 35' 15''$ N., $120^{\circ} 53'$
 $20''$ E.), Verde Island Passage, in
260 fathoms. March 24, 1908. 3 examples
19 to 22 mm.

Sta. D. 5125. Hogas Island (W.), S.
 11° E., 24 miles ($10^{\circ} 48'$ N., $121^{\circ} 48' 30''$ E.),
in 411 fathoms.
Sulu Sea vicinity of southern Panay,
February 3, 1908. 3 examples 14 to 25 mm.

Sta. 5196. Capitanillo Light, N. 5°
 $30'$ W., 14.30 miles ($10^{\circ} 44' 30''$ N., $124^{\circ} 7'$
 $30''$ E.), off northern Cebu. April 3, 1908.
2 examples 18 to 24 mm.

1 ¹/₅ to 1 ¹/₂; ventral 2 ¹/₂ to 2 ⁴/₅. ³⁴²⁵

Back dark brown, strongly contrasted with brilliant silvery white, like quicksilver, on greater part of sides and lower surfaces.

Atlantic, Indian and Pacific Oceans.

close below bases of lowest pectoral
rays, lower midway to little nearer
upper than seen

28420 U.S.N.M. Messina. Italian
Commission. Length 35 to 48 mm. 3 examples.

40062 U.S.N.M. Messina. Royal
Museum Florence. Length 39 to 53 mm.
7 examples.

49383 U.S.N.M. Messina. M. Bellotti.
Length 58 to 60? mm. 4 examples.

Sta. D. 5195. Capitanillo Island
Light, N. 11.75 miles ($10^{\circ}47'N.$, 124°
 $06'30''E.$), off northern Cebu Island.
April 3, 1908. 92 examples 16 to 26 mm.

Sta. 5437. Hermana Mayor Light,
N. $69^{\circ}E.$, 4.9 miles ($15^{\circ}45'54''N.$, 119°
 $42'45''E.$), west coast of Luzon, ~~mtt~~
~~manila~~. May 8, 1909. Length 18 mm.

Sta. 5669. Mamuju Island (E.), S.
 $14^{\circ}E.$, 18.5 miles ($2^{\circ}19'30''S.$, $118^{\circ}50'00''$
 $E.$), Macassar Strait. December 29, 1909.
Length 20 mm.

Sta. D. 5186. Lusaran Light, N. $20^{\circ}E.$,
37.80 miles ($9^{\circ}53'30''N.$, $122^{\circ}15'30''E.$),
Between Panay and Negros. March 30, 1908.
Length 20 mm.

3427

Myctophum tenisoni horman

Myctophum tenisoni horman, Discovery
Rep., vol. 2, 1930, p. 321, fig. 27. 38 miles
N. 39° E. of Jason Light, South Georgia,
90 meters; 32 miles N. 51° E. of Jason
Light, 170 meters; S. $48^{\circ}18'$ W. $53^{\circ}09'$, 120
meters; S. $41^{\circ}43'20''$ W. $42^{\circ}20'40''$, 2000
meters; S. $45^{\circ}03'$ E. $17^{\circ}03'$, 850 to 950
meters; S. $46^{\circ}25'$ E. $15^{\circ}13'$, 96 meters;
S. $52^{\circ}25'$ E. $9^{\circ}50'$, 650 to 700 meters; Drake
Strait, S. $58^{\circ}27'30''$ W. $67^{\circ}55'$, 77 meters;
S. $46^{\circ}56'$ W. $46^{\circ}03'$, 1050 to 1350 meters.

Depth $3\frac{7}{8}$ to $4\frac{1}{4}$; head 3 to $3\frac{2}{5}$.
Snout 4 in head from snout tip;
eye $2\frac{3}{5}$ to 3, greater than snout or
interorbital; maxillary extends $\frac{1}{6}$ eye
diameter behind eye, expansion little
convex behind and $1\frac{4}{5}$ eye, length
 $1\frac{1}{4}$ in head from snout tip; interorbital
very low.

Very small antorbital photophore
above front eye edge also above nostril,
another somewhat larger at front
eye edge below; 2 operculars, upper
larger and level with upper hind
maxillary edge; 3 branchiostegals;
5 pectorals, level, last 2 interspaces

? Scopelus colletti Lütken, Kon. Danske
Vidensk. Selsk. Skrift. Kjöbenhavn,
ser. 6, vol. 7, 1892, p. 249, fig. 7. South of
Cape Horn; southern Indian Ocean.

? Benthosema colletti Goode and Bean,
Oceanic Ichth., 1895, p. 78 (compiled).

little closer than first two; 1
suprapectoral, slightly lower than
opercular on lower part of pectoral
base; 2 subpectorals, close, side by
side, little lower than suprapectoral
and second over second pectoral; 4
ventrals, second scarcely elevated,
equidistant; 1 supraventral, nearly
at lowest third between lateral line
and ventral fin base; anals 17 or 18,
level, 3 or 4 behind last anal ray
base; 3 supraanals, all close
together, nearly form straight inclined

$$\begin{array}{r} 30 \\ 3 \overline{) 151} \end{array}$$

line, first interspace greater than second, first spot level with supraventral and behind fourth ventral, uppermost midway between lateral line and anal fin origin; no posterolateral; 2 close set precaudals, second scarcely elevated. Male with 6 or 7 supracaudal luminous scales, female with 4 or 5 infracaudal.

D. 11 to 13, origin slightly behind ventral origin, fin height $1\frac{1}{2}$ in head; adipose fin 3; A. 22 to 24, origin just behind last dorsal

ray; caudal $1\frac{1}{5}$, forked; least
depth of caudal peduncle $3\frac{2}{5}$;
pectoral $1\frac{1}{4}$ to $1\frac{1}{5}$; ventral $2\frac{1}{8}$.

Uniform silvery. Length 69 mm.

(Norman.)

South Atlantic and Antarctic Oceans.

3432

Myctophum anderssoni Lönnberg

Myctophum anderssoni Lönnberg, Zool.
Anzeiger, vol. 28, 1905, p. 763. S. $48^{\circ}54'$
W. $51^{\circ}40'$, 2700 meters; Wiss. Ergebn.

Schwed. Südpolar-Exped., vol. 5, pt. 6,
1905, p. 61 (S. $49^{\circ}56'$ W. $49^{\circ}56'$, 2700 meters).

— Parr, Bull. Bingham Oceanogr. Collection,
vol. 3, art. 3, 1928, p. 58 (diag. in key).

— Norman, Discovery Rep., vol. 2, 1930, p.
320 (S. $48^{\circ}34'$ W. $53^{\circ}34'30''$, 90 meters).

Myctophum (Myctophum) anderssoni
Brauer, Deutsch. Tiefsee Exped. Valdivia,
vol. 5, Tiefsee-Fische, 1906, p. 172, fig.
84 (types).

3433

Scopelus antarcticus (not Günther)

Boulenger, Rep. Coll. Nat. Hist.

Southern Cross, vol. 5, Pisces, 1902, p.
174.

Depth $4\frac{1}{2}$; head $3\frac{1}{4}$. Snout $5\frac{2}{5}$
in head; eye 3, greatly exceeds snout;
maxillary reaches opposite hind
eye edge, expansion $2\frac{1}{3}$ in eye,
length $1\frac{3}{4}$ in head; interorbital
low, eye impinging on upper profile.

Apparently no antorbital photophore;
2 operculars, upper larger and
level with upper maxillary edge,
lower more forward; 3 branchiostegals;

5 pectorals, last 2 closer; 3
sub-pectorals, first 2 close with
second over second pectoral and
third little higher before bases
of lowest pectoral rays; 4 ventrals,
equidistant; 1 supraventral before
first ventral over ventral fin base;
15 anals, first 2 at same level and
little higher than those immediately
following and last 4 behind anal
fin base; 2 precaudals, close set,
low.

il. II, 9, origin slightly behind
ventral origin; adipose fin $3\frac{1}{4}$ in

Received of the Treasurer of the

Board of Directors of the

City of New York the sum of

Five hundred and no/100 Dollars

for the purchase of

the sum of

Five hundred and no/100 Dollars

for the purchase of

the sum of

Five hundred and no/100 Dollars

for the purchase of

the sum of

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Five hundred and no/100 Dollars

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the sum of

Five hundred and no/100 Dollars

head, over last anal rays; A.

A.II, 17, origin below last dorsal ray base; caudal $1\frac{3}{5}$; least depth of caudal peduncle $3\frac{1}{6}$; pectoral $1\frac{3}{4}$; ventral $2\frac{1}{5}$.

Length 56 mm.

(Brauer.)

South Atlantic, Antarctic.

Horman suggests possibly the slightly elevated 2 anterior anals may really be the supraanal series.

Myctophum antarcticum (Günther)
Scopelus antarcticus Günther,
 Ann. Mag. Nat. Hist., ser. 5, vol. 2,
 1878, p. 184. Antarctic Ocean, 1975
 fathoms; Rep. Voy. Challenger, vol.
 22, 1887, p. 196, pl. 51, fig. D (type).
 — Goode and Bean, Oceanic Ichth.,
 1895, p. 512 (reference).

Myctophum antarcticum Brauer,
 Zool. Anzeiger, vol. 28, Nr. 10, Dec.
 20, 1904, p. 387 (diagnosis in key).
 — Lönnberg, Schwed. Südpolar Exped.,
 vol. 5, pt. 6, 1905, p. 60 (S. $64^{\circ}14'$ W. $52^{\circ}50'$, surface; S. $63^{\circ}24'$ W. $45^{\circ}40'$, 2800
 meters; S. $49^{\circ}56'$ W. $49^{\circ}56'$, 2700 meters).
 — Roule, Deux. Expéd. Antarct. Franç.,

figs. 8-9 (Atlantic materials; discussion).
— Fowler, Mem. Bishop Mus., vol. 10,
1928, p. 69, ^{cont} fig. 13 of young (Honolulu,
Pearl and Hermes Reef; type of
Rhinoscopelus oceanicus).

Myctophum (Myctophum) affine Brauer,
Deutsch. Tiefsee Exped. Valdivia, vol. 5,
Tiefsee-Fische,
1906, p. 190, text figs. 105-107 (photophores)
Cape Verde; Gulf of Guinea, Benguela;
(west of Chagos Archipelago; east and
west of Seychelles). ✓

Myctophum opalinum Goode and Bean,
Oceanic Ichth., 1895, pp. 72, 511, pl. 22,
fig. 81. h. Lat. 38° - 39° W. Long. 71° - 72° , in
542 to 1536 fathoms. — Waite, Records
Australian Mus., vol. 5, pt. 3, 1904, p.

Poiss., 1913, p. 20

3437

— Regan, Trans. Roy. Soc. Edinburgh, vol. 49, pt. 2, 1913, p. 234 (S. $63^{\circ}51'W.$ $41^{\circ}50'$, 2300 fathoms; S. $71^{\circ}50'W.$ $23^{\circ}30'$, 1000 fathoms; S. $68^{\circ}32'W.$ $12^{\circ}49'$, 800 fathoms); Brit. Antarctic "Terra Nova" Exped., Zool., vol. 1, no. 4, 1916, p. 127, pl. 1, figs. 1-3 (S. 51° to 55° E. 167° to 168° and W. 78° to 177°). — Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec.

1928, p. 58 (diagnosis in key). — Horman,

Discovery Rep., vol. 2, 1930, p. 322, fig.

28 (S. $52^{\circ}25'E.$ $9^{\circ}50'$, 650 to 700 meters;

S. $54^{\circ}30'E.$ $5^{\circ}34'$, 139 meters;

S. $50^{\circ}59'W.$ $11^{\circ}44'$, 58 meters;

Bransfield Strait, South Shetlands,

S. 62°

3438

27' W. $58^{\circ}11'30''$, 134 meters; S. 62°
48' W. $60^{\circ}05'$, 188 meters; S. $24^{\circ}31'$
E. $12^{\circ}15'30''$, 117 meters; S. $53^{\circ}34'15''$
W. $38^{\circ}36'15''$, 134 meters).

Myctophum (Myctophum) antarcticum
Brauer, Deutsch. Tiefsee Exped. Valdivia,
vol. 15, Tiefsee Fische, 1906, p. 168,
text fig. 82a-c (off Cape Colony; east
of South America; Antarctic Ocean;
east of Bouvet Island; 1500 to 2000
meters). — Pappenheim, Deutsch.

Südpolar Exped., vol. 15, Zool. pt. 7,
1914, p. 192 (S. $43^{\circ}4'$ E. $36^{\circ}22'$, 2500

meters). — Barnard, Ann. South African
Mus., vol. 21, pt. 1, June 1925, p. 240
(compiled).

Depth $3\frac{7}{8}$; head $3\frac{7}{8}$. Snout $5\frac{2}{5}$
 in head; eye $2\frac{1}{2}$, greatly exceeds
 snout; maxillary reach $\frac{1}{4}$ an eye
 diameter behind eye, ^{truncate} expansion
 $1\frac{3}{4}$ in eye, length $1\frac{2}{3}$ in head;
 interorbital low.

Scales cycloid, 30 to 37 enlarged
 in lateral line.

Antorbital photophores 2, small.

Myctophum antarcticum (Günther)
Scopelus antarcticus Günther, Ann. Mag.
Nat. Hist., ser. 5, vol. 2, 1878, p. 184.

Antarctic Ocean, in 1975 fathoms; Rep.
Voy. Challenger, vol. 22, 1887, p. 196, pl.
51, fig. d. (type). — Goode and Bean,
Oceanic Ichth., 1895, p. 512 (reference).

Myctophum (Myctophum) antarcticum
Brauer, Deutsch. Tiefsee Exp. Valdavia,
vol. 5, Tiefsee - Fische, 1906, p. 168, text
figs. 82a-c (off Cape Colony; east of South
America; Antarctic Ocean; east of
Bouvet Island; in 1500 to 3000 meters).

^ — Barnard, Ann. South African Mus., vol.
21, pt. 1, June 1925, p. 240 (compiled).

both well separated on front eye
edge; 2 operculars, upper larger
and level with upper hind maxillary
edge; 3 branchiostegals; 5 pectorals,
last interspace shortest; 3 subpectorals,
first above and little advanced from
second which in turn just over
and advanced from third pectoral,
third level with first and both
little higher than upper opercular
close before bases of lowest pectoral
rays; 4 ventrals, equidistant; 1
supraventral, little lower than
first and third subpectorals over
or close before ventral origin; 16

fig. (head ⁴²above), pl. 4, fig. 2 (between
~~Macquarie~~¹⁴⁰ and Auckland Islands;
Macquarie Island), p. 74 (south-west
of Tasmania). — Regan, Brit. Antarctic
"Terra Nova" Exped., Zool., vol. 1, no. 1, 1914,
p. 1 (S. $55^{\circ} 6'$ W. $120^{\circ} 3'$, surface), Zool.,
vol. 1, no. 4, 1916, p. 127, pl. 1, figs. 1-3
(S. 51° to 55° E. 167° to 168° and W. 78° to
 177°). — Parr, Bull. Bingham Oceanogr.
Collection, vol. 3, art. 3, Dec. 1928, p. 58
(diagnosis in key). — Horman, Discovery
Rep., vol. 2, 1930, p. 322, fig. 28 (S. $52^{\circ} 25'$ E.
 $9^{\circ} 50'$, 650 to 700 meters; S. $54^{\circ} 30'$ E. $5^{\circ} 34'$,
139 meters; S. $50^{\circ} 59'$ W. $11^{\circ} 44'$, 58 meters;
Bransfield Strait, South Shetlands, S. 62°

3441

to 19 anals, last 4 behind anal
fin base; 3 supraanals, first
level with third subpectoral over
and little before third ventral, second
over fourth ventral midway between
same and lateral line, third close
below lateral line over and little
before first anal; 2 close set precaudals
above lower rudimentary caudal
rays. Males with 7 supracaudal
luminous plates, females with 5
infracaudal.

D. III, 12, first branched ray $1\frac{2}{5}$
in head; adipose fin inserted opposite
last $\frac{2}{5}$ of anal base, length $2\frac{1}{8}$

Myctophum antarcticum Lonnberg,
Wiss. Ergebn. Schwed. Südpolar-
Exped., vol. 5, pt. 6, 1905, p. 60

Gilbert, Bull. Amer. Mus. Nat. Hist.,
New York, vol. 30, art. 2, March 10, 1911, p.
13 (400 miles south west of Valparaiso, Chile).

— Roule, Deux. Expéd. Antarct. Franç.
Fish., 1913, p. 20.

— Regan, Trans. Roy. Soc. Edinburgh,
vol. 49, pt. 2, 1913, p. 234 (S. $63^{\circ}51'$ W. 41°
 $50'$, 2300 fathoms; S. $71^{\circ}50'$ W. $23^{\circ}30'$, 1000
fathoms; S. $68^{\circ}32'$ W. $12^{\circ}49'$, 800 fathoms).

— Waite, Austral. Antarct. Exped., Sci. Rep.,
Ser. C. Zool. Bot., vol. 3, pt. 1, 1913, p. 59, text

in head; A. III, 18, inserted below
last $\frac{2}{5}$ of dorsal base, first
branched ray $1\frac{2}{5}$; caudal small;
least depth of caudal peduncle
 $3\frac{2}{5}$; pectoral $1\frac{1}{10}$; ventral 2.

Length 61 mm. (Brauer.)

Atlantic, Indian and Antarctic
Oceans. Brauer gives D. ranging
13 to 15 and A. 19 to 23.

figs. 8-9 (Atlantic materials; discussion).

— Fowler, Mem. Bishop Mus., vol. 10,

1928, p. 69 (not fig. 13 of young example)

(Honolulu; Pearl and Hermes Reef; type

of Rhinocephalus oceanicus). — Horman,

Discovery Rep., vol. 2, 1930, p. 325 (S. 46°

36' 30" W. 45° 07', 5 meters; N. 12° 08' W. 20°

53' 30", 200 to 300 meters). —

Myctophum (Myctophum) affine Papenheim,
Deutsch. Südpolar Exped., vol. 15, Zool. pt. 7,
1914, p. 193 (N. 15° 50' W. 25° 23'; S. 5° 59' W. 17° 39').

Myctophum cocoi (not Looco) Günther,
Rep. Voy. Challenger, vol. 1, 1871.

Scopelus caninianum (not Günther,
Rep. Voy. Challenger, vol. 1, 1871).

Myctophum subasperum (Günther)

Scopelus subasper Günther, Cat. Fishes Brit.

Mus., vol. 5, 1864, p. 411. Pacific Ocean in

S. Lat. $43^{\circ}30'$ E. Long. 123° . — Lütken, Kon.

Dansk. Vidensk. Selsk. Skrift. Kjöbenhavn,

ser. 6, vol. 7, ^{no. 6,} 1892, p. 240, fig. 1 (^{identical} "New York").

Dasy Scopelus subasper Goode and Bean,

Oceanic Ichth., 1895, p. 92 (compiled).

Myctophum subasperum Brauer, Zool.

Anzeiger, vol. 28, hr. 10, Dec. 20, 1906, p.

388 (diagnosis in key). — Parr,

Bull. Bingham Oceanogr. Collection,

vol. 3, art. 3, Dec. 1928, p. 58

(diagnosis in key). — Norman,

Discovery

Rep., vol. 2, 1930, p. 323, fig. 29 (S. ³⁴⁴⁴
35°18' W. 19°01'10", 1000 meters; S.
41°33'30" W. 17°58', 5 meters).

Myctophum (Myctophum) subasperum
Brauer, Deutsch. Tiefsee Exped. Valdivia,
vol. 15, Tiefsee Fische, 1906, p. 175, text
fig. 87 (type of Myctophum megalops).

Myctophum megalops Peters, Monatsber.
Akad. Wiss. Berlin, 1864, p. 393. Cape Horn.

? Scopelus colletti Lütken, Kon. Dansk.

Vidensk. Selsk. Skrift. Kjöbenhavn, ser.
6, vol. 7, 1892, p. 249, fig. 7. S. 30° to 28°16' E.

96° to 97°30', southern Indian Ocean; 600 miles
west of Cape Horn.

? Benthosema colletti Goode and Bean, Oceanic
Ichth., 1895, p. 78 (compiled).

Myctophum antarcticum (not Günther)
Gilbert, Bull. Amer. Mus. Nat. Hist.
 New York, vol. 30, art. 2, March 10, 1911,
 p. 13 (400 miles south west of Valparaiso,
 Chile). — Waite, Australasian Antarctic
 Exped. Sci. Rep., ser. C., Zool. bot., vol. 3,
 pt. 1, 1913, p. 59, text fig. (head above), pl.
 4, fig. 2 (between Macquarie and Auckland
 Islands; Macquarie Island), p. 74 (south
 west of Tasmania). — Regan, Brit.
 Antarctic "Terra Nova" Exped., 1910, Zool.
 vol. 1, no. 1, 1914, p. 1 (S. $55^{\circ}6'$ W. $120^{\circ}3'$);
 Zool. 1, no. 4, 1916, p. 127, pl. 1, figs. 1-3 (S.
 51° to 55° E. 167° to 168° ^{W.} 78° to 177°). — Parr,

Bull. Bingham Oceanogr. Collection,
vol. 3, art. 3, Dec. 1928, p. 58 (compiled;
part).

Depth $3\frac{3}{4}$ to $4\frac{1}{4}$; head $3\frac{2}{5}$ to $3\frac{3}{4}$,
width $2\frac{2}{5}$. Snout $5\frac{1}{8}$ to $6\frac{1}{2}$ in head;
eye $2\frac{3}{5}$ to $4\frac{2}{3}$, greater than or
subequal with snout, $1\frac{1}{5}$ in
interorbital; maxillary reaches
below hind eye edge or not quite
to hind preopercle edge, expansion
convex behind and $1\frac{3}{4}$ to 2 in eye,
length $1\frac{1}{2}$ to $1\frac{3}{4}$ in head; interorbital
low. Gill rakers 9 + 20.

Scales 38 to 40 in lateral line, where enlarged; 3 above, 3 or 4 below. Scales cycloid, with age upper ones with deeply crenulated edges, forming ctenoid appearance.

Two small antorbital photophores, upper little above upper pupil edge and lower little below lower pupil edge; 2 operculars, upper larger, level with upper hind maxillary edge; 3 branchiostegals; 5 pectorals, nearly equidistant; suprapectoral nearly level with upper subpectoral

3448

or over first subpectoral, which
close before bases of lowest pectoral
fin rays; first subpectoral lower
than opercular and behind second
pectoral; 4 ventrals, equidistant;
1 supraventral about ^{lower} $\frac{2}{5}$ in space
between ventral fin base and lateral
line; anals 15 or 16, in slight sigmoid
curve or may form 3 groups, then
4 of last group behind anal fin base;
3 supraanals, first nearly level
with second or supraventral close
before third ventral, second forms
inclined line with last ventral to
uppermost in which nearly median,

Myctophum antarcticum ^(not Günther) Gilbert, Bull.
Amer. Mus. Nat. Hist. New York, vol. 30,
art. 2, March 10, 1911, p. 13 (400 miles south
west of Valparaiso, Chile). — Regan, Trans.
Royal Soc. Edinburgh, vol. 49, pt. 2, 1913, p.

Brit. Antarctic "Terra Nova" Exped. 1910, Zool., vol. 1, no. 4,
1916, p. 127, pl. 1, figs. 1-3 (51° to 55° S., 167° to 168° E. and 78° to 77° W.);
— Waite, Australasian Antarctic Exped.

Sci. Rep., Ser. C. Zool. Bot., vol. 3, pt. 1, 1913,
p. 59, text fig. (head above), pl. 4, fig. 2
(between Macquarie and Auckland Islands;
Macquarie Island), p. 74 (south west of
Tasmania). — Parr, Bull. Bingham

Oceanogr. Collection, vol. 3, art. 3, Dec. 1928,

p. 58 (compiled; part).

— Regan, Brit. Antarctic "Terra Nova" Exped. 1910, Zool., vol. 1,
no. 1, 1914, p. 1 ($55^{\circ} 6'$ S., $120^{\circ} 3'$ W., surface);

uppermost slightly below lateral line over anal origin; 2 precaudals, low, close together. Upper supracaudal luminous scales 6 or 7, infracaudals 1 to 5.

D. III, 10 to ^{III}12, first branched ray $1\frac{2}{5}$ to $1\frac{3}{4}$ in head; adipose fin $2\frac{1}{10}$ to $5\frac{2}{3}$, posterior over anal;

A. III, 16 to III20, first branched ray ^{origin opposite posterior dorsal base} $1\frac{2}{5}$ to $2\frac{1}{4}$; caudal $1\frac{1}{5}$ to $1\frac{1}{4}$, forked; least depth of caudal peduncle $2\frac{7}{8}$ to $3\frac{1}{3}$; pectoral $1\frac{1}{10}$, nearly reaches second supraanal photophore;

ventral 2 to $2\frac{1}{4}$.

Length 95 mm. (Günther, Brauer, Waite, Norman.)

Atlantic, Pacific, Indian and Antarctic Oceans. Regan says of the larva "the eyes grow at first at a slower rate than the fish as a whole, as is the rule in fishes generally, but later on grow faster than the rest of the fish, so that they are proportionately much larger in the adult than in the young. * * * * * this is due to the fact that the adults live at greater depths than the young."

Taaning evidently calls attention
 to Lütken's record - as he says
 under Myctophum arcticum (1928)

"M. subaspermum (Gthr. 1864) recorded
 from "off New York" (Oslo museum);
 verification of this record is desirable."

Myctophum interruptum ³⁴⁵² Taaning

Myctophum interruptum Taaning,
Vidensk. Medd. Dansk naturh. Foren.

Köbenhavn, vol. 86, 1928, p. 56. North

Atlantic; diagnosis in key. — Parr,

Bull. Bingham Oceanogr. Collection, vol. 3,
art. 3, 1928, p. 59 (diagnosis in key). —

Horman, Discovery Rep., vol. 2, 1930, p. 324

(S. $33^{\circ}53'45''$ E. $9^{\circ}26'30''$, 1000 meters);

S. $35^{\circ}01'$ E. $10^{\circ}18'$, 250 meters).

Scopelus (Rhinocepelus) rarus, ^(part) Lütken,

Kon. Dansk. Vid. Selsk. Skrift.

Kjöbenhavn, ser. 6, vol. 7, 1892, p. 246, ^{fig. 4 (variation).}

3453

Rhinoscopelus rarus Goode and Bean,
Oceanic Ichth., 1895, pp. 91, 512

(note). — Jordan and Evermann, Bull.
U. S. Nat. Mus., no. 47, pt. 1, 1896, p. 569

(copied).

Myctophum rarum Brauer, Zool. Anzeiger,
vol. 28, no. 10, Dec. 20, 1904, p. 391 (reference).

15, Tiefsee Fische, 1906, p. 204, figs. ⁻¹²⁴ 123¹

(N. 42° ^{W.} 14° ; south of Cape Verde Islands
N. 4° to 10° W. 29°). — Barnard, Ann.

South African Mus., vol. 21, June 1925,
p. 245 (on Lütken).

3453

Rhinoscopelus rarus Goode and Bean,
Oceanic Ichth., 1895, pp. 91, 512
(note). — Jordan and Evermann, Bull.
U. S. Nat. Mus., no. 47, pt. 1, 1896, p. 569

(copied).

Myctophum (Myctophum) rarum Brauer,
Deutsch. Tiefsee Exped. Valdivia, vol.
15, Tiefsee Fische, 1906, p. 204, figs. ⁻¹²⁴ 123¹
(N. 42° ^{W.} 14° ; south of Cape Verde Islands
N. 4° to 10° W. 29°). — Barnard, Ann.
South African Mus., vol. 21, June 1925,
p. 245 (on Lütken).

Depth $5\frac{1}{5}$; head 4. Snout 5
in head; eye $3\frac{1}{2}$, greatly exceeds
snout; maxillary reaches $\frac{1}{2}$ eye
^{not nearly reaching hind preopercle edges,}
diameter behind eye, [^] length $1\frac{1}{2}$ in
head; interorbital rather low.

Scales cycloid, 38 to 40 in lateral
line.

Two small antorbital photophores,
upper close above on upper front
profile of eye, lower below lower
pupil edge; 2 operculars, upper
larger and level with hind upper
maxillary edge; 3 branchiostegals;

6 pectorals, last interspace longest
second subequal, first little less
than either; 2 subpectorals, first
little lower, before second pectoral,
nearly in line with first pectoral
and second subpectoral; 1 suprapectoral,
close before origin of pectoral fin
or over second pectoral; 2 ventrals,
first close behind ventral fin base
and second close before vent; 1
supraventral nearly at lowest third
between ventral origin and lateral
line; anals 6 to 8 + 5 to 7, postero-

3456

anals behind anal fin base; 3
supraanals, lowest rather close
above and behind second ventral,
second still little posterior and
midway between anal origin and
uppermost, which in turn directly
over median and close below lateral
line; 1 posterolateral above and little
behind last anteroanal, also close
below lateral line; 2 precaudals,
close, over lower rudimentary caudal
rays. Long supracaudal luminous
plate in male.

D. III, 9, first branched ray $1\frac{4}{5}$
in head; adipose fin $3\frac{1}{3}$; A.
III, 14, first branched ray $1\frac{4}{5}$;
caudal $1\frac{1}{6}$, well emarginate; least
depth of caudal peduncle $3\frac{3}{4}$;
pectoral $1\frac{2}{3}$; ventral $2\frac{1}{4}$.

Length 53 mm. (Brauer.)

Atlantic Ocean.

Myctophum crenulare Jordan and Gilbert

Myctophum crenulare Jordan and Gilbert,
Proc. U. S. Nat. Mus., vol. 3, 1880 (1881),

p. 274. From stomach of Oreynus
alalunga taken in Santa Barbara
Channel, California; Bull. U. S. Nat.
Mus., no. 13, 1882, p. 282 (compiled).

— Goode and Bean, Oceanic Ichth.,
1895, p. 87 (512) (reference). — Brauer,
Deutsch. Tiefsee Exped. Valdivia, vol.
15, Tiefsee Fische, 1906, p. 163 (diagnosis
in key). — Parr, Bull. Bingham
Oceanogr. Collection, vol. 3, art. 3, Dec.
1928, p. 59 (compiled); Proc. U. S. Nat.
Mus., vol. 76, ^{art. 10,} 1929, p. , fig. 2 (type;

~~L. parvius 267 fig. 15 (Cope Campbell)~~
~~S. book 267 (Cope Campbell)~~
Garr, Bull. Bingham Oceanogr.

Collection, vol. 3, art. 3, December 1928, p.
61 (note).

Alysia loricata Lowe, Proc. Zool. Soc. London,
1839, p. 87. Madeira.

Myctophum coruscans Richardson, Ichth.
Voy. Erebus and Terror, 1844-48, p. 40,
pl. 27, figs. 1-5. Between St. Helena and
Ascension Island; between Australia
and New Zealand. ^{Scopelus} Hutton, Trans.

New Zealand Instit., vol. 5, 1872 (1873),
p. 270 (compiled). — Goode and
Bean, Oceanic Ichth., 1895, p. 89 (reference).

Scopelus coruscans Macleay, Proc. Linn.
Soc. New South Wales, vol. 6, 1881, p. 224

type of Tarletonbeania tenua). —

Fowler, Occas. Pap. Bishop Mus.,

vol. 9, no. 18, Feb. 1932, p. 4 (reference).

Myctophum crenularis Brauer, Zool.

Anzeiger, vol. 28, 1904, p. 390 (diagnosis
in key).

Tarletonbeania crenularis Jordan and
Evermann, Bull. U. S. Nat. Mus., no. 47,
pt. 1, 1896, p. 575 (compiled). —
Gilbert, Proc. U. S. Nat. Mus., vol.
48, 1915, p. 313 (midway between Van
Diego and San Clemente Island, at
surface).

Myxophum procellarum (Bean) Jordan,
Proc. U. S. Nat. Mus., vol. 3, 1880 (1881)
p. 457. Off Straits of Fuca.

Tarletonbeania tenuis Eigenmann and
Eigenmann, Proc. Cal. Acad. Sci., ser.
2, vol. 3, 1890, p. 7. Probably near
Coronado Islands (from mouth of
Sebastodes miniatus). — Jordan

and Evermann, Bull. U. S. Nat. Mus.,
no. 47, pt. 1, 1896, p. 575 (compiled).

— Goode and Bean, Oceanic Ichth.,
1895, p. 89, pl. 28, fig. 105 (off Point
Loma, California).

Myctophum tenua Brauer, Deutsch.
Tiefsee Exped. Valdivia, vol. 15, Tiefsee-
Fische, 1906, p. 162 (diagnosis in key).

Myctophum affine (not Lütken) Fowler,
Mem. Bishop Mus., vol. 10, 1928, p. 69,
fig. 13.

Depth $4\frac{1}{4}$; head $3\frac{2}{3}$, width 3.

Snout $7\frac{1}{3}$ in head; eye $3\frac{1}{2}$, greater
than snout or interorbital; maxillary
reaches back well beyond eye,
nearly opposite well inclined hind
preopercle edge, slender, length
 $1\frac{2}{5}$ in head; interorbital $3\frac{3}{4}$,
convex. Gill rakers 7 + 13, lanceolate,
nearly equal eye; gill filaments $\frac{4}{5}$

gill rakers.

Scales 49 in lateral line to caudal base and 2 more on latter; enlarged in lateral line and tubes simple; 3 above, 5 below, 21 predorsal to occiput. Scales with 3 or 4 basal radiating striae; 7 or 8 broad, marginal apical points; circuli fine, obsolete.

| Two antorbital photophores, small, upper well elevated, lower larger and below pupil level; 2 operculars, upper larger and on

3463

line with lower eye edge and
upper subpectoral; 3 equidistant
branchiostegals; 6 pectorals,
first and second interspaces subequally
largest; suprapectoral very small,
close before and below pectoral
fin origin; 2 subpectorals, first
or lower in inclined line with
suprapectoral and second pectoral;
6 ventrals, equidistant; 1
supraventral, about lowest $\frac{2}{5}$
between lateral line and ventral
fin origin; anals 10 + 4, nearly

all on same level, equidistant,
 posteroanals behind anal fin
 base; 3 supraanals, first little
 before and closer to second than to
 fifth ventral though over last,
 uppermost below lateral line over
 and little behind second supraanal;
 1 mediolateral below lateral line
 and little behind last anteroanal;
 1 precaudal, low.

D. III, 10, I, first branched ray
 $1\frac{1}{2}$ in head; adipose fin $4\frac{1}{10}$; A.
III, 15, I, first branched ray $1\frac{4}{5}$;

caudal subequal with head, emarginate;
 least depth of caudal peduncle
 $4\frac{4}{5}$; pectoral $1\frac{3}{5}$; ventral $2\frac{1}{4}$.

Back brown, skin of scale
 pockets dark to dusky.

Eastern Pacific.

23945 U.S.N.M. N. 49° W. 151°

Dr. W. H. Dall.

No. 716. Length 65? mm.

27402 U.S.N.M.

California. Dr. D. S. Jordan.

Length 52? mm. Type of Myctoplum
crenulare.

41882 U.S.N.M.

Off Point Loma, California. Dr. C. H.
 Eigenmann. Length 71? mm.

3466

Myctophum cuvieri (Castelnau)

Scopelus cuvieri Castelnau, Proc. Zool.
Acclimatiz. Soc. Victoria, vol. 2, 1873,
p. 106. Knob Island, Torres Strait.

— Macleay, Proc. Linn. Soc. New
South Wales, vol. 6, 1881, p. 222
(copied). — Lütken, Kon. Dansk.
Vidensk. Selsk. Skrift. Kjöbenhavn,
ser. 6, vol. 7, 1892, p. 242 (type). —
Waite, Records Australian Mus.,
vol. 5, 1904, p. 156 (note on type).

Myctophum cuvieri Parr, Bull.
Bingham Oceanogr. Collection, vol. 3,
art. 3, Dec. 1928, p. 59 (note).

Depth $3\frac{4}{5}$ in total, deepest just ^{Eye} behind pectoral origin; head 4, very large, 2 in head; maxillary very long, almost reaches end of preopercle, slender, gradually expanded behind where rounded; lower jaw longer than upper; Teeth numerous, villiform.

Scales 40 or 41 in lateral line, very broad. Very large opercular scale. Scales strongly ciliated or denticulated on margins.

Supraanal photophores form straight line, central one more distant from upper than from lower; ventrals 4 or 5.

D. II, 10, inserted considerably nearer snout than caudal base; adipose fin arched, pointed, above end of anal; A. II, 17, behind end of dorsal; caudal rays 19 and several short ones each side, strongly forked; pectoral 17, twice long as ventral, reach equally far back; ventral 8, inserted rather before dorsal.

Dark brown where scales have fallen, retained scales brilliant iridescent silver. Fins bright yellow. Length about 90 mm. (Castelnau; Waite.)

Queensland. This imperfectly known ³⁴⁶⁹
species has not been seen since
originally discovered. The original
type, according to Waite, in the
Paris Museum in 1904.

Myctophum rarum (Lütken)

Scopelus (Rhinoscopelus) rarus Lütken,
Kon. Dansk. Vidensk. Selsk. Skrift.

Köbenhavn, ser. 6, vol. 7, 1892, p. 246, fig.

4. N. 33° ?; N. 20° W. 48° to 50° ; S. $34^{\circ}50'$

W. $4^{\circ}30'$; S. $37^{\circ}40'$ E. 12° .

Rhinoscopelus rarus Goode and Bean,

Oceanic Ichth., 1895, pp. 99, 512 (compiled).

— Jordan and Evermann, Bull. U.S. Nat.

Mus., no. 47, pt. 1, 1896, p. 569 (compiled).

Myctophum rarum (not Brauer 1906 or

Barnard 1925) Taaning, Vidensk. Medd.

Brauer, Zool. Anzeiger, vol. 28, no. 10,
Dec. 20, 1904, p. 390 (diagnosis in
key).

vol.

Parr, Bull. Bingham Oceanogr. Collection,

Myctophum rarum (Lütken)

Scopelus (Rhinoscopelus) rarus Lütken,
Kon. Dansk. Vidensk. Selsk. Skrift.

Köbenhavn, ser. 6, vol. 7, 1892, p. 246, fig.

4. N. 33° ?; N. 20° W. 48° to 50° ; S. $34^{\circ}50'$

W. $4^{\circ}30'$; S. $37^{\circ}40'$ E. 12° .

Rhinoscopelus rarus (Goode and Bean,
Oceanic Ichth., 1895, pp. 99, 512 (compiled).

— Jordan and Evermann, Bull. U.S. Nat.
Mus., no. 47, pt. 1, 1896, p. 569 (compiled).

Myctophum rarum (not Branner 1906 or
Barnard 1925) Taaning, Vidensk. Medd.

Dansk naturh. Foren. København, vol.
86, 1928, p. 55 (diagnosis in key). —

Parr, Bull. Bingham Oceanogr. Collection,

from
your Cl
1948, p. 55
Danish natural
history

Taaning, Rep. Danish Oceanogr. Exped.
Lit., No. 5, vol. 2, A. 7, 1918, p. 45,
15-16 (Mediterranean, Messina, Sea of
Mora).

vol. 3, art. 3, dec. 1928, p. 59 (diagnosis
in key).

Myctophum rarum forma integer Brauer,
Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20,
1904, p. 391 (diagnosis in key). —
Pappenheim, Deutsch. Südpolar Exped.,
vol. 15, Zool. 7, 1914, p. 194 (S. $23^{\circ}33'W$.
 $20^{\circ}51'$, 3000 meters).

Depth $4\frac{3}{4}$; head $3\frac{9}{10}$. Snout 5
in head; eye $3\frac{1}{3}$, greater than snout;
maxillary extends half an eye diameter
behind eye, narrow, length $1\frac{1}{2}$ in
head; interorbital very low.

Two small antorbital photophores,
upper well elevated on upper front
eye edge, lower below lower pupil

vol. 3, art. 3, dec. 1928, p. 59 (diagnosis
in key).

Myctophum (Myctophum) rarum var.
integer Brauer, Deutsch. Tiefsee Exped.

Valdivia, vol. 15, Tiefsee-Fische, 1906,
N. 34° to 46° W. $15^{\circ}30'$ to 16° ,

p. 205, figs. 125 and 126. Madeira;
 $3^{\circ}55'E$, $7^{\circ}48'5''$, Gulf of Guinea.

Depth $4\frac{3}{4}$; head $3\frac{9}{10}$. Snout 5
in head; eye $3\frac{1}{3}$, greater than snout;
maxillary extends half an eye diameter
behind eye, narrow, length $1\frac{1}{2}$ in
head; interorbital very low.

Two small antorbital photophores,
upper well elevated on upper front
eye edge, lower below lower pupil

edge on lower front eye edge;
2 operculars, upper larger, close
above hind end of maxillary; 3
branchiostegals; 5 pectorals, last
interspace longest and third shortest;
1 suprapectoral, ^{close} before bases of
upper pectoral rays; 2 subpectorals,
first forms vertical line with second
pectoral and suprapectoral, nearly
equidistant, second subpectoral little
higher though close below lowest
pectoral ray base; 4 ventrals, equidistant;
1 supraventral, about level with second
subpectoral or slightly above lowest
third in space between ventral fin

Myctophum punctatum Rafinesque

Myctophum punctatum Rafinesque, Indice

Ittiol. Sicilia, 1810, pp. 35, 56, pl. 2, fig. 5.

Sicily. — Goode and Bean, Oceanic Ichth.,

→ 1895, p. 71, pl. 22, fig. 80 (Atlantic materials).

— Weber, Siboga Exped., vol. 57, Fische, 1913,

p. 86 (Banda Sea). — Weber and Beaufort,

Fishes Indo Austral. Archipelago, vol. 2,

→ 1913, p. 160, fig. 62 (tail) (Weber's material).

— Parr, Bull. Bingham Oceanogr. Collection,

vol. 3, art. 3, Dec. 1928, p. 65 (compiled).

— Fowler, Mem. Bishop Mus., vol. 10, 1928,

p. 70 (compiled).

Myctophum (Myctophum) punctatum

Brauer, Deutsch. Tiefsee Exped. Valdivia,

base and lateral line; anals
 7+6, level, posteroanals behind
 anal fin base; 2 supraanals,
 lower little lower than supraventral
 little behind vent and upper little
 below lateral line before first
 anteroanal; 1 posterolateral, behind
 last anteroanal little below lateral
 line; 2 precaudals, close set, above
 lower rudimentary caudal rays,
 posterior little higher.

D. III, 9, first branched ray $1\frac{3}{5}$
 in head; adipose fin 3; A. III, 13,
 first branched ray $1\frac{3}{5}$, ^{origin below middle of dorsal base} caudal $1\frac{1}{8}$,
 deeply emarginate; least depth of

Genus B. ...

Bar

burragei Townsend and Nichols

Body elongate, tapering backward from head. Head large, attenuate in front. Eye large, advanced. Mouth large, lower jaw well protruded in pointed knob before front of upper jaw. Edges of jaws with single row of small teeth. Gill openings wide, membranes joined below, free from isthmus. Skin with small thin cycloid scales. Dorsal and

caudal peduncle 3; pectoral $1\frac{1}{2}$;
ventral $1\frac{2}{3}$.

Length 23 mm. (Brauer.)

Atlantic Ocean.

94 (not 93) (Bay of Bengal; Chagos
Archipelago; Seychelles; south of Cape
Colony). — Barnard, Ann. South African
Mus., vol. 21, pt. 1, June 1925, p. 242 (compiled).

Myctophum pterotum Gilbert, Mem. Carnegie
Mus., vol. 6, no. 21, August 1913, p. 81

(Kagoshima). — Weber, Siboga Exped., vol.
57, Fische, 1913, p. 86 (Macassar Strait,
in 11 meters). — Weber and Beaufort,

Fishes Indo Austral. Archipelago, vol. 2,
1913, p. 157 (Macassar Strait, in 11 meters).

Fowler, Mem. Bishop Mus., vol. 10, 1928,
p. 70 (copied). — Pap, Bull. Bingham Oceanogr. Coll.,

vol. 3, art. 3, Dec. 1928, p. 60 (compiled); Proc. U.S. Nat. Mus., 76, 1929,
p. 70 (typical Myctophum gilberti).
Myctophum gilberti Wermann and Seale, Bull.
Bur. Fisher., vol. 27, 1907 (1908), p. 55, fig. 1.
Bulan and Manila.

Myctophum imitator Parr

Myctophum imitator Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, 1928, p. 60

(on Gilbert); Proc. U. S. Nat. Mus., vol. 76, 1929, p. 6, fig. 3 (type of Myctophum suborbitale).

Myctophum suborbitale (not Weber 1913)

Gilbert, Mem. Carnegie Mus., vol. 6, no. 2, 1913, p. 82. Suruga Bay, to 300 fathoms.

? Myctophum simile Taaning, Vidensk.

Medd. Dansk Naturhist. Foren.

vol. 86, 1928, p. 56. North Atlantic; diagnosis in ^{key.}

(Lampanyctus alatus (not Goode and Bean))

Breder, Bull. Bingham Oceanogr. Collection, vol. 1,

art. 1, 1927, p. 17 (Tongue of the Ocean; South West Harbor, New Providence; Swan Island; Green Cay; Turneffe Cay, Bahamas; 300 to 400 fathoms).

Depth 4; head $2\frac{7}{8}$ to 3, width 2.

Snout $4\frac{1}{2}$ to $6\frac{1}{3}$ in head from snout tip; eye $2\frac{1}{4}$ to $2\frac{9}{10}$, greatly exceeds snout or interorbital; maxillary extends well behind eye nearly to vertical preopercle edge, expansion $1\frac{3}{4}$ in eye, length $1\frac{2}{5}$ to $1\frac{1}{2}$ in head; opercle posteriorly extended, wholly covers upper and lower pectoral photophores, notched opposite pectoral base. Gill rakers $4 + 10?$, lanceolate, much greater than gill filaments or $1\frac{1}{2}$ in eye.

Scales 34 in lateral line, scales very caducous, most all fallen.

Minute antorbital photophore on
upper side of nostril; well developed
subocular spot on cheek below hind part
of eye near maxillary edge; ^{2 operculars, upper larger and entirely below level of eye,} lower
opercular very small, behind end of
^{branchiostegals?;}
maxillary; 5 pectorals, first 2 interspaces
wider than posterior 2, first pair nearest
median line and fifth pair more widely
separated at outer ventral ray bases; 1
suprapectoral, above lower subpectoral
and second pectoral, obliquely above
and anterior to pectoral base or slightly
nearer pectoral fin than lateral line; 2
subpectorals, lower anterior to upper
though but little below; 4 ventrals,

second elevated and vertically above first
on level with second subpectoral, other
3 contiguous to midventral line and
interspace of first and third longer than
between third and fourth; 1 supraventral
over fifth pectoral or even slightly advanced
and distant from lateral line $\frac{1}{4}$ its
distance from ventral bases; 6 + 5 anals,
anteroanals equidistant from anal fin
base, first posteroanal above last anal
ray base; 3 supraanals, sharply
angulated, anterior or lowest horizontally
in front of second or very slightly above
line joining second with elevated ventral,
second median between lateral line and

first anal ray base, uppermost on lateral line above first anteroanal; 1 posterolateral on lateral line, above second or third anal ray before last; 2 precaudals, widely separated, first at bases of rudimentary caudal rays, second obliquely above and posterior on lateral line. Two infracaudal luminous scales.

Dusky, with little luster.

Japan. Allied with Myctophum pterotum and Myctophum fibulatum, but differing from all the known species in the genus by the presence of a small round photophore on the cheek below the posterior portion of the

eye. As my materials are imperfect
I have modified many of the items
in the above description from Gilbert.

74473 U.S.N.M.

Albatross Collection 5064. Length 21 mm.
Type of Myctophum suborbitale.

74500 U.S.N.M.

Albatross Collection 4920. Length 13 mm. Paratypes
of Myctophum suborbitale. 2 examples.

74661 U.S.N.M.

Albatross Collection 4909. Length 13 mm.

74662 U.S.N.M.

Albatross Collection 5084. Length 25 mm.

Myctophum pterotum (Alcock)

Scopelus (Myctophum) pterotus Alcock,

Ann. Mag. Nat. Hist., ser. 6, vol. 6, 1890,

p. 217. N. Lat. $18^{\circ}30'$ E. Long. $84^{\circ}46'$, in 98

to 102 fathoms, off Madras; Journ.

Asiatic Soc. Bengal, vol. 65, pt. 2, 1896,

p. 333 (reference).

Scopelus pterotus Alcock, Illustrat. Zool.

Investigator, Fishes, pt. 2, 1894, pl. 9, fig. 3;

Cat. Deep Sea Fishes Indian Mus., 1899,

p. 162 (Bay of Bengal, in 98 to 102 fathoms;

Arabian Sea, in 370 to 419 fathoms).

Myxotophum pterotum Branner, Zool.

Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904,

p. 388 (diagnosis in key). — Gilbert,

Mem. Carnegie Mus., vol. 6, No. 21, Aug.

1913, p. 81 (Kagoshima). — Weber,

Siboga Exped., vol. 57, Fische, 1913,

p. 86 (Macassar Strait, 11 meters). —

Weber and Beaufort, Fishes Indo

Austral. Archipelago, vol. 2, 1913, p. 157

(Macassar Strait, 11 meters). — —

— Barnard, Ann. South African Mus.,
 vol. 21, pt. 1, 1925, p. 242 (off Cape Point).
 — Fowler, Mem. Bishop Mus., vol.
 10, 1928, p. 70 (copied). — Parr, Bull.
 Bingham Oceanogr. Collection, vol. 3,
 art. 3, Dec. 1928, p. 60 (compiled); Proc.
 U. S. Nat. Mus., vol. 76, 1929, p. 7
 (type of Myctophum gilberti). —
Horman, Ann. Mag. Nat. Hist., ^{ser. 10,} vol. 4,
 Nov. 1929, p. 512, fig. 2 (types). — Parr,
 Bull. Bingham Oceanogr. Collection, vol. 2,
 art. 4, Oct. 1931, p. 22 (N. $22^{\circ}50'2''$ W. $109^{\circ}48'15''$,
 525 fathoms; N. $16^{\circ}14'$ W. $99^{\circ}36'30''$, 625 fathoms).

Myctophum (Myctophum) pterotum
Brauer, Deutsch. Tiefsee Exped.
 Valdivia, vol. 15, Tiefsee Fische,
 1906, p. 182, text fig.

94 (not 93) (N. $7^{\circ}1'2''$ E. $85^{\circ}56'5''$, Bay
 of Bengal; S. $4^{\circ}5'8''$ E. $73^{\circ}24'8''$,
 Chagos; S. $2^{\circ}43'8''$ E. $61^{\circ}12'6''$,
 Seychelles; S. $4^{\circ}34'8''$ E. $53^{\circ}42'8''$;
 S. $37^{\circ}31'2''$ E. $17^{\circ}1'6''$, Cape Colony). —

Pappenheim, Deutsch. Südpolar Exped.,
 vol. 15, Zool., pt. 7, 1914, p. 193 (N. $17^{\circ}28'$ W.
 $29^{\circ}42'$, 3000 meters, off Cape Verde
 Islands; N. $28^{\circ}42'$ W. $34^{\circ}33'$). — Barnard,

Ann. South African Mus., vol. 21, pt. 1,
 June 1925, p. 242 (compiled).

Myctophum pterotum

? Scopelus pyrosobolus Alcock, Ann.

Mag. Nat. Hist., ser. 6, vol. 6, 1890, p.

218, pl. 8, fig. 3. Off Madras coast

(N. Lat. $15^{\circ}38'$ E. Long. $82^{\circ}30'$, in 920 to

690 fathoms). — Goode and Bean,

Oceanic Ichth., 1895, p. 512 (reference).

— Alcock, Journ. Asiatic Soc. Bengal,

vol. 66, pt. 2, 1896, p. 333 (off Madras

coast, in 920 to 960 fathoms); Cat. Deep

Sea Fish. Indian Mus., 1899, p. 163

(Bay of Bengal; off Madras coast; in

690 to 920 fathoms); Illustrat. Zool.

Investigator, Fishes, pt. 7, 1900, pl. 30,

fig. 3. — Boulenger, Ann. Mag. Nat.

Hist., ser. 7, vol. 7, 1901, p. 261 (N. Lat.
 $24^{\circ} 29' E.$ Long. $56^{\circ} 56'$, in 225 fathoms,
Sea of Oman).

Myctophum gilberti Evermann and
Seale, Bull. Bur. Fisher., vol. 27, 1907
(1908), p. 55, fig. 1. Bulan and Manila.

Depth 4 to $4\frac{1}{2}$; head $2\frac{2}{3}$ to $3\frac{1}{5}$,
width $2\frac{1}{5}$ to $2\frac{3}{5}$. Snout 6 to $6\frac{1}{4}$ in
head from snout tip; eye $3\frac{1}{8}$ to $3\frac{1}{4}$,
greater than snout or interorbital;
maxillary reaches little beyond eye but
not quite to slightly inclined preopercle
edge, expansion $2\frac{1}{4}$ to 3 in eye, length
 $1\frac{2}{3}$ to $1\frac{7}{8}$ in head from snout tip;
interorbital 4, slightly convex. Gill rakers
7+18, lanceolates, $1\frac{2}{5}$ in eye, subequal
with gill rakers.

Scales 29 or 30 in lateral line; 3 above,
3 below, 18 or 19? predorsal. Scales very
caducous, mostly fallen.

Sta. D. 5186. Lusaran Light, N.
 20° E., 37.80 miles ($9^{\circ} 53' 30''$ N.,
 $122^{\circ} 15' 30''$ E.), between Panay and
Negros. March 30, 1908. 2 examples
29 to 83? mm.

Sta. D. 5539. Apo Island (C.), N. 78°
W., 8.2 miles ($9^{\circ} 3' 20''$ N., $123^{\circ} 24' 45''$),
between Negros and Siquijor, in no sounding.
August 19, 1909. Length 19 mm.

Sta. D. 5230. Limasawa (S.), S. 68° E.,
22.50 miles ($10^{\circ} 1' 50''$ N., $124^{\circ} 42' 30''$
E.), between Bohol and Leyte, in 118
fathoms. May 7, 1908. 4 examples,
15 to 23 mm.

Small antorbital photophore at upper front eye edge; 3 operculars, upper larger and usually veiled, level with lower half of pupil or lower eye edge, lower opercular behind upper end of maxillary; often veiled or inconspicuous; 3 equidistant veiled branchiostegals; 5 pectorals, third interspace shortest and last spot little above ventral fin base; 1 suprapectoral, well before pectoral fin origin or third pectoral, or little behind first or lower subpectoral, about midway between lateral line and pectoral fin origin; 2 subpectorals, first or lower nearly on same level as upper and little behind

second pectoral, upper close before and below lowest pectoral fin ray bases; 4 nearly equidistant ventrals, first over and behind second; 1 supraventral at upper $\frac{2}{5}$ in space between ventral fin base and lateral line; 5 or 6 + 4 or 5, anals, first posteroanal above last anal fin ray base; 3 supraanals, first little though distinctly higher than second, little behind third ventral, second supraanal behind fourth ventral or opposite anal fin origin and third or uppermost close behind last anteroanal or close below lateral line; 1 posterolateral over and slightly posterior from last

anteroanal close below lateral line;
 2 wide set precaudals, first low
 near lower edge of tail and posterior
 high and close below end of lateral
 line. Male with 3 or 4 luminous
 supracaudal scales.

D. III or IV, 9, I, first branched ray $1\frac{2}{5}$
 to $1\frac{3}{4}$ in total head length; adipose fin
 $3\frac{1}{8}$ to $3\frac{3}{4}$; A. III, 15, I, first branched ray
 $1\frac{3}{4}$ to $2\frac{1}{5}$; caudal $1\frac{1}{5}$ to $1\frac{1}{4}$, forked;
 least depth of caudal peduncle $2\frac{4}{5}$ to 3;
 pectoral 1 to $1\frac{1}{10}$; ventral $2\frac{1}{2}$ to $2\frac{3}{5}$.

Brownish, pockets of scales often
 dusky. Sides of head and scales on sides
 silvery white, with iridescent reflections.

3491

Iris silvery white. Snout pale. Fins
pale.

Indian and Pacific Oceans. Scopelus
pyrosobolus Alcock was founded on an
example over 75 mm. long. It is very
indifferently figured and described,
but appears to be the present species.

D. 5211. Panalangan Point, Talajit Island, N. 33° E., 5.25 miles (N. $11^{\circ}51'35''$ E. $124^{\circ}14'$), east of Masbate Island.

In 155 fathoms. April 17, 1908. Length 38 to 46 mm. 3 examples.

D. 5190. Pescador Island, S. 9° E., 10.70 miles (N. $10^{\circ}8'15''$ E. $123^{\circ}16'45''$), Tanon Strait, east coast of Negros. In 295 fathoms. April 1, 1908. Length 12 to 31 mm. 32 examples.

D. 5228. Romblon Light, N. 3° E., 6.25 miles (N. $12^{\circ}29'30''$ E. $122^{\circ}15'45''$), south of Romblon. May 5, 1908. Length 44 to 57 mm. 33 examples.

55900 U.S.N.M. Bulaw, Sorsogon. Bureau of Fisheries 18682 (3841). Length 62

mm. Type of Myctophum gilberti.

74666 U.S.N.M. Kagoshima, Japan.

Albatross Collection . Length 36 to 53

mm. 19 examples.

74667 U.S.N.M.

Albatross Collection . Length 36 to 60

mm. 23 examples.

Myctophum glacialis (Reinhardt)
Scopelus glacialis Reinhardt, Kon.
Danske Vidensk. Selsk. Naturv.
Math. Likh. Kjöbenhavn, vol. 6, 1837,
p. cx. Omenak, Ritesbank and
Jakobshavn, Greenland; vol. 7,
1838, p. 126 (note). — Kröyer, Poiss.
mer du nord, Voy. Scandin. Laponie,
Gaimard, 1847, pl. 16, fig. 2; naturh.
Tidsskr. Köbenhavn, ser. 2, vol. 2,
1846-49, p. 230 (discussion). — Gill,
Proc. Acad. Nat. Sci. Philadelphia
(Cat. Fishes East Coast), 1861, p. 53 (reference).

— Günther, Cat. Fishes Brit. Mus.,
vol. 5, 1864, p. 407 (compiled); Rep.

Voy. Challenger, vol. 22, 1887, p. 196

(compiled) Lütken, Vidensk. Medd.

Godthaab, Gadhavn, Ikerasak, Kangatsiak,
Frederikshaab, Sukkertøffen, Umanok,
Jakobshavn, Ritenbenk, Hammerfest;

p. 203 (discussion); Kon. Dansk. Vidensk.

Selsk. Skrift. Kjöbenhavn, ser. 6, vol. 7,

1892, p. 250, fig. 8 (N. $36^{\circ}29'$ W. $2^{\circ}28'$). —

Holt, Proc. Zool. Soc. London, 1898, p.

552, pl. 46, figs. 1-5, pl. 47, figs. 6-7

(Faroe Channel). — Holt and Byrne,

Dep. Agric. Techn. Instruct. Ireland,

Sci. Invest., 1910, no. 6 (1911), p. 13, fig.

3495

— Günther, Cat. Fishes Brit. Mus.,
vol. 5, 1864, p. 407 (compiled); Rep.
Voy. Challenger, vol. 22, 1887, p. 196
(compiled). — Lütken, Vidensk. Medd.
Dansk
Naturh. Foren. København, 1891 (1892),
p. 203 (discussion); Kon. Dansk. Vidensk.
Selsk. Skrift. København, ser. 6, vol. 7,
1892, p. 250, fig. 8 (N. $36^{\circ}29'$ W. $2^{\circ}28'$). —
Holt, Proc. Zool. Soc. London, 1898, p.
552, pl. 46, figs. 1-5, pl. 47, figs. 6-7
(Faroe Channel). — Holt and Byrne,
Dep. Agric. Techn. Instruct. Ireland,
Sci. Invest., 1910, no. 6 (1911), p. 13, fig.

3496

3 (outline) (Färö Channel and Irish Coast, 1150 fathoms).

Myctophum glaciale Jordan and Gilbert,
Bull. U. S. Nat. Mus., No. 16, 1882, p.
283 (compiled). — Smitt, Hist.

Scandinavian Fishes, ed. 2, pt. 2, 1895,
p. 491, fig. 235 (Norway). — Collett,
Forhand. Vidensk. Selsk. Christiania,
1903 (1904), p. 113 (Søndmør, Hardangerfjord,
Trondhjemsfjord, Hammerfest). —

Brauer, Zool. Anzeiger, vol. 28, Nr. 10,
Dec. 20, 1904, p. 388 (diagnosis in key).

— Fage, Ann. Inst. Oceanogr. Monaco,

vol. 1, no. 7, 1910, p. 12, pl. 1, fig. 6

(photograph) (Gulf of Lyon). —

L. Jaaning, Rep. Danish Oceanogr.

Exped., no. 5, 1918, p. 31, figs. 11-13

(Mediterranean, Sea of Marmora, Atlantic).

— Johnsen, Bergens Mus. Aarbok,

1921-22 (1923), no. 6, p. 1 (North Atlantic).

— Jaaning, Vidensk. Medd. Dansk.

Naturh. Foren. København, vol. 86, 1928,

p. 56 (North Atlantic; Mediterranean;

diagnosis in key). — Parr, Bull.

Bingham Oceanogr. Collection, vol. 3,

art. 3, 1928, p. 60 (compiled). —

Horman, Ann. Mag. Nat. Hist., ser.
10, vol. 4, Nov. 1929, p. 514 (type
of Myctophum scoticus); Discovery
Rep., vol. 2, 1930, p. 324 (N. $13^{\circ}25'$ W.
 $18^{\circ}22'$, 900 meters).

Myctophum (Myctophum) glaciale
Brauer, Deutsch. Tiefsee Exped. Valdivia,
vol. 15, Tiefsee - Fische, 1906, p. 180,
fig. 92 (Copenhagen Museum examples).

— Zugmayer, Rés. Camp. Sci. Monaco,
vol. 35, 1911, p. 24 (N. $36^{\circ}51'30''$ W. $1^{\circ}30'$,
1300 meters; N. $38^{\circ}2'$ E. $1^{\circ}50'30''$, surface;
N. $37^{\circ}39'$ E. $0^{\circ}20'$, 2170 meters; N. $36^{\circ}17'$
W. $1^{\circ}58'$, 1800 meters; N. $37^{\circ}46'10''$ W. $0^{\circ}5'$,
520 meters).

Scopelus mülleri (not Gmelin) Gill,
 Proc. Acad. Nat. Sci. Philadelphia
 (Cat. Fishes East Coast), 1861, p. 53
 (reference).

Scopelus mülleri Collett, Forhand.
 Vidensk. Selsk. Christiania, 1878, no.
 4, p. 23 (N. $63^{\circ}5'W. 3^{\circ}$); no. 14, 104
 (Hordhave Exped.); 1879, no. 1, p. 84
 (Vöndmör, Hardangerfjord? Hammerfest);
 Norges Nordh. Exped. Zool., Fische,
 1880, p. 158. — Goode and Bear,
 Bull. Mus. Comp. Zool., vol. 10, 1883,
 pp. 190, 220 (N. $38^{\circ}20'30''W. 73^{\circ}26'40''$,
 395 fathoms). — ~~Goode~~ Fishes of the

~~U. S. Nat. Mus., vol. 31, pt. 2, 1889, pl. 203 (figure
for left eye. — Miner, Rep. U. S. Fish
Comm., pt. 11, 1883 (1885), p. 197 (N. 39°
44' 30" W. 71° 4', 1022 fathoms).~~

Benthosema mulleri Goode and Bean,
Oceanic Ichth., 1895, p. 76, pl. 22, fig.
85 (N. 34° to 44° W. 50° to 75°, 2369 fathoms).

— Jordan and Evermann, Bull. U. S.
Nat. Mus., no. 47, pt. 1, 1896, p. 574
(compiled).

Scopelus scoticus Günther, Rep.

Voy. Challenger, vol. 31, pt. 2, 1889, p.
31. Faröe Channel.

2 (3501)

Depth 4 to $4\frac{2}{5}$; head 3 to $3\frac{1}{3}$,
width $2\frac{1}{5}$ to $2\frac{1}{5}$. Snout $4\frac{3}{4}$ to 5
in head from snout tip; eye $2\frac{1}{2}$ to $2\frac{3}{5}$,
greater than snout or interorbital;
maxillary reaches little beyond eye though
not quite to vertical hind preopercle
edge, expansion 2 to $2\frac{1}{4}$ in eye, length
 $1\frac{2}{5}$ to $1\frac{1}{2}$ in head from snout tip;
interorbital 4 to $4\frac{1}{5}$, nearly level. Gill
rakers 4 + 13, lanceolate, slender, $1\frac{2}{5}$ in
eye or 4 times gill filaments.

Scales 34 to 36 in lateral line; 4
above, 3 or 4 below, 13 or 14 predorsal to
occiput. Caudal base scaly. Scales
caducous, most all fallen.

? Scopelus brachygnathos Bleeker, Act.
Soc. Sci. Ind. Néerland., no. 3, vol. 1,
1856, p. (6) 65. Manado, Celebes; natuurk.
Tijdschr. Nederl. Indië, vol. 13, 1857, p.
385 (Batjan); vol. 17, 1858-59, p. 143
(Boeleling, Bali).

Diaphus chrysorhynchus (not Gilbert,
^{and Cramer})
Gilbert and Cramer, Proc. U. S. Nat. Mus.,
vol. 19, 1896, pl. 38 fig. 2 (wrongly transposed
on plate).

Myctophum (Myctophum) pterotum (not
Alcock) Brauer, Deutsch. Tiefsee Exped.
Valdivia, vol. 5, Tiefsee-Fische, 1906, p.
182, fig. 93 (part; 3 Hawaiian examples).
— Barnard, Ann. South African Mus.,

Two small antorbital photophores²,
upper close on upper front eye edge,
lower below level of pupil; 2 operculars,
upper larger and in line with lower
eye edge and front or lower subpectoral;
3 veiled equidistant branchiostegals;
5 equidistant pectorals; 1 suprapectoral,
veiled by opercle, before and above
pectoral fin origin in line with lower
subpectoral and second pectoral, also
nearer pectoral fin origin than lateral
line; 2 subpectorals, first or lower

D. 5365. Cape Santiago Light, S.
68° W., 5.4 miles ($13^{\circ}48'30''$ N., 120°
 $43'45''$ E.), Balayan Bay, Luzon,
in 160 fathoms. February 22, 1909.
Length 89 mm.

D. 5267. Inatocot Point, S. 39° E.,
5.50 miles ($13^{\circ}42'20''$ N., $120^{\circ}58'25''$
E.), Verde Island Passage and
Batangas Bay, in 170 fathoms.
June 8, 1908. Length 47 mm.

4 equidistant ventrals; 1 supraventral, midway between lateral line and ventral fin origin; 6 + 7 anals; only first 2 posteroanals above anal fin base; 3 supraanals, first 2 nearly on same level with supraventral, first little behind second ventral, second little before or above fourth ventral, third or uppermost on lateral line above or little behind first anteroanal; 1 posteroanal above and little posterior to last anteroanal; 2 wide set precaudals, first low and second elevated though well below end of lateral line. Male with 2 supracaudal luminous scales, female with 1 infracaudal.

D. 5649. North Island (S.), N. 87°
E., 22 miles ($5^{\circ} 36' 00''$ S., $122^{\circ} 07'$
 $36''$ E.), Buton Strait. December 16, 1909.
Length 16 to 37 mm. 28 examples.

D. 5293. Escareo Light, N. 59° W., 6
miles ($13^{\circ} 28' 15''$ N., $121^{\circ} 04' 30''$ E.),
China Sea vicinity of southern Luzon,
in 180 fathoms. July 23, 1908.

Length 58 mm.

D. 5564. Lammi Island (N.), S.
 85° W., 6.1 miles ($5^{\circ} 50' 00''$ N., $120^{\circ} 31'$
 $00''$ E.), between Jolo and Tawi Tawi,
in 236 fathoms. September 21, 1909.
Length 67 to 73 mm. 3 examples.

D. III, 10, I, first branched ray $1\frac{1}{2}$ to $1\frac{3}{5}$ in total head length; adipose fin $2\frac{7}{8}$ to 3; A. III, 15, I or III, 16, I, first branched ray $1\frac{3}{5}$ to 2; caudal $1\frac{1}{3}$, well forked; least depth of caudal peduncle 3 to $3\frac{1}{3}$; pectoral $1\frac{4}{5}$ to 2; ventral $2\frac{1}{4}$.

Brown, usually most all scales lost so scale pockets dusky. Iris and sides of head with silvery white reflections. Fins all uniformly pale.

Atlantic Ocean and Mediterranean.

~~Sibutu~~ D. 5604. Bilatu (town), N. 26°
W., 8.7 miles ($0^{\circ}22'30''$ N., $122^{\circ}42'$
 $30''$ E.), Gulf of Tomini, Celebes.
November 15, 1909. Length 15 to 19 mm.
5 examples.

D. 5176. Escarceo Light, S. 57° E.,
7 miles ($13^{\circ}35'15''$ N., $120^{\circ}53'20''$ E.),
Verde Island Passage, in 260
March 24, 1908.
fathoms. Length 37 to 63 mm. 8
examples.

D. 5579. Sibutu Island peak, S.
 77° E., 20.3 miles ($4^{\circ}54'15''$ N., 119°
 $9^{\circ}52''$ E.), vicinity Darvel Bay,
Borneo, in 175 fathoms. September 25, 1909.
Length 49 to 65 mm. 3 examples.

26090 U.S.N.M. Off Block Island. ³⁵⁰⁴

U. S. F. Comm. 1880. Length
38 to 56 mm. 5 examples.

26091 U.S.N.M. Off Block Island.

U. S. F. Comm. 880. 1880. Length
38 to 52 mm. 5 examples.

26131 U.S.N.M. Off Newport, R. I.

U. S. F. Comm. Length 38 to 40 mm.
2 examples.

26169 U.S.N.M. Newport, Rhode Island.

U. S. F. Comm. 893. 1889. Length
49 to 58 mm. 2 examples.

28774 U.S.N.M.

Bur. Fisher. Length 43 to 63 mm.
18 examples.

28775 U.S.N.M. N. 39° W. 60°

Fish Hawk Collection.

Length 37 to 61 mm.

13 examples.

28774 U.S.N.M. N. $39^{\circ}46'30''$ W. $69^{\circ}47'$

705 fathoms. U.S. Fish Comm. 936. Length

64 mm?

28783 U.S.N.M.

Length 67 mm.

28799 U.S.N.M.

Length 40 mm.

28839 U.S.N.M. N. 39° W. 70°

U.S. Fish Comm. 155. Length 58 to 65 mm. 2 examples.

28851 U.S.N.M. N. $39^{\circ}55'$ W. $70^{\circ}28'$.

U.S. Fish Comm.

Length 60 to 63 mm. 3 examples.

~~Station~~ D. 5224. Malabrigo Light,
N. 79° W., 6.25 miles ($13^{\circ}34'50''$ N.,
 $121^{\circ}21'45''$ E.), between Marinduque
and Luzon. April 24, 1908. Length
13 to 15 mm. 4 examples.

D. 5268. Matocot Point, S. 50°
E., 5.80 miles ($13^{\circ}42'$ N., $120^{\circ}57'15''$
E.), Verde Island Passage and
Batangas Bay, in 170 fathoms.
June 8, 1908. Length 58 to 66 mm.
4 examples.

3 examples. Baradero Bay,
Mindoro. July 23, 1908. Length
77 to 83 mm.

28877 U.S.N.M. Vineyard Sound, Mass.

U.S. Fish Comm. 995. Length 35 to 43 mm.

4 examples.

28884 U.S.N.M.

Length 23 to 57 mm.

2 examples.

28935 U.S.N.M. N. 39° W. 69°

U.S. Fish Comm. 1031. Length 39 to 60 mm.

13 examples. All in poor condition.

28945 U.S.N.M. N. 39° W. 69°

U.S. Fish Comm. 1030. Length 36 to 53 mm.

5 examples.

28950 U.S.N.M. N. 39° 57' W. 69° 16'

U.S. Fish Comm.

Length 49 to 55 mm.

2 examples.

Sta. D. 5228. Romblon Light, N. 3°
E., 6.25 miles ($12^{\circ} 29' 30''$ N., $122^{\circ} 15' 45''$ E.), south of Romblon. May 5,
1908. 26 examples 16 to 23 mm.

Sta. D. 5320. $20^{\circ} 85'$ N., $120^{\circ} 3'$ E.,
China Sea, vicinity of Formosa, in
1804 fathoms. November 6, 1908. Length
19 mm.

Sta. D. 5530. Balicasag Island (C.),
N. 32° E., 4.3 miles ($9^{\circ} 26' 45''$ N., $125^{\circ} 38' 30''$ E.), between Siquijor and Bohol,
in no sounding. August 11, 1909.
Length 23 mm.

31642 U.S.N.M. N. $39^{\circ}57'W$. $70^{\circ}37'$,

192 fathoms. August 18, 1882. U.S. Fish Comm. 1113. Length 42 to 58 mm. 8 examples.

31665 U.S.N.M. N. $39^{\circ}56'W$. $70^{\circ}35'$, 245

fathoms. August 18, 1882. U.S. Fish Comm.

1112. Length 41 to 65 mm. 60 examples.

31757 U.S.N.M. N. 40° W. 68°

Albatross Collection 1120. Length 48 to 60 mm.

3 examples.

31764 U.S.N.M. N. $39^{\circ}34'$ W. $71^{\circ}56'$

U.S. Fish Comm. Length 50 to 53 mm. 2 examples.

31779 U.S.N.M. N. 39° W. 71°

U.S. Fish Comm. Length 18 to 53 mm. 4 examples.

31780 U.S.N.M. N. 39° W. 71°

U.S. Fish Comm. Length 38 to 55 mm. 6 examples.

32665 U.S.N.M. N. 37° W. 74°

Albatross Collection . Length 36 to 65 mm.

9 examples.

32666 U.S.N.M. N. 37° W. 74°

Albatross Collection . Length 67 mm.

32672 U.S.N.M. N. $37^{\circ}20'42''$ W. $74^{\circ}17'36''$

Bur. Fisheries . Length 50 to 65 mm.

9 examples.

33284 U.S.N.M.

Length 58 mm.

33288 U.S.N.M. N. $40^{\circ}04'20''$ W. $68^{\circ}43'50''$

Albatross Collection . Length 38 to 58 mm.

11 examples. All in poor condition.

33299 U.S.N.M.

Length 48 to 53 mm.

3 examples. All very poorly preserved.

33318 U.S.N.M.

Length 48 mm.

33473 U.S.N.M. N. 40° W. 67°

Albatross Collection 2083. Length 54 to 65 mm.

5 examples.

33503 U.S.N.M.

Length 53 to 64 mm.

4 examples.

33547 U.S.N.M. N. 39° W. 68°

Albatross Collection 2101. Length 38 to 64 mm.

7 examples.

35454 U.S.N.M. N. 39° 54' 30" W. 71° 05' 00",

Albatross Collection 2185. Length 34 to 40 mm.

4 examples.

35463 U.S.N.M. N. 39° W. 71°

Albatross Collection 2187. Length 57 to 64 mm.

4 examples.

35613 U.S.N.M. N. $39^{\circ}45''$ W. $71^{\circ}35'15''$

Albatross Collection . Length 59 to 65 mm.

5 examples.

51583 U.S.N.M. N. 39° W. 69°

U. S. Fish Comm. 1096. Length 48 to 54 mm.

2 examples.

51585 U.S.N.M. N. $39^{\circ}51'$ W. $69^{\circ}47'$

U. S. Fish Comm. Length 41 to 60 mm.

3 examples.

8 examples U.S.N.M.

Albatross Collection 2023. Length 47 to 65 mm.

1 example U. S. N. M.

Albatross Collection 1157. Length 51 mm.

3 examples U. S. N. M.

Albatross Collection 2427. Length 55 to 68 mm.

2 examples U. S. N. M.

Albatross Collection 2532. Length 57 to 58 mm.

4 examples U. S. N. M.

Albatross Collection 2546. Length 52 to 65 mm.
In poor condition.

1 example U. S. N. M.

Albatross Collection 2565. Length 70 mm.

1 example (with 28837 U. S. N. M.). N. 39°

W. 70°

U. S. Fish Comm. 954. Length 50 mm.

Myctophum laternatum Garman

Myctophum laternatum Garman, Mem. Mus.
Comp. Zool., vol. 24, 1899, p. 267, pl. 56, fig. 1.
N. Lat. 7° - 27° W. Long. 7° - 111° , to 1168 fathoms
(West coast Central America and Gulf of
California). — Gilbert, Mem. Carnegie Mus.,
vol. 6, no. 2, August 1913, p. 77 (near
Nagasaki, in 300 fathoms). — Weber,
Siboga Exped., vol. 57, Fische, 1913, p. 86
(Banda Sea, in 1500 meters). — Weber
and Beaufort, Fishes Indo Austral.
Archipelago, vol. 2, 1913, p. 156 (fig. 58
on p. 153) (Weber's materials). — Regan,
Fishes Brit. Antarctic "Terra Nova" Exped.,
Nat. Hist. Rep. Zool., vol. 1, ^{no. 4,} 19~~14~~16, p. 139

pl. 6, fig. 7 (S. $35^{\circ}29'$ W. $50^{\circ}26'$; 2 meters). ³⁵¹³

— Taaning, Rep. Danish Oceanogr.

Exped. Medit., no. 5, 1918, p. 150, fig. 46

(Bay of Cadiz; off Azores; off Grand Bank; 220 to 1600 meters). — Parr,

Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. (61) 67 (N. $32^{\circ}24'$

W. $64^{\circ}29'$, 5000 feet). — Norman, Discovery

Rep., vol. 2, 1930, p. 324 (S. $33^{\circ}25'$ E. $6^{\circ}31'$,

1000 meters; S. $34^{\circ}5'15''$ E. $16^{\circ}00'45''$, 1000

meters; S. $33^{\circ}20'$ to $33^{\circ}46'$ E. $15^{\circ}18'$ to $15^{\circ}08'$,

2000 to 2500 meters; S. $2^{\circ}43'30''$ W. $00^{\circ}56'30''$,

125 to 175 meters; S. $2^{\circ}49'30''$ W. $9^{\circ}25'30''$,

800 to 100 meters; S. $00^{\circ}56'$ W. $14^{\circ}8'30''$, 250 meters; N. $3^{\circ}04'45''$ W. $16^{\circ}52'$, 125 to 225 meters; N. $8^{\circ}12'$ W. $18^{\circ}49'$, 120 meters).

3514

— Parr, Bull. Bingham Oceanogr. Collection,
vol. 2, art. 4, Oct. 1931, p. 23, fig. 8 (outline)
(N. $16^{\circ}14'$ W. $99^{\circ}36'30''$, 625 fathoms; N. $11^{\circ}5'$
W. $89^{\circ}20'45''$, 300 fathoms).

Myctophum (Myctophum) lateratum Brauer,
Deutsch. Tiefsee Exped. Valdivia, vol. 15,
Tiefsee Fische, 1906, p. 178, text figs. 89-91
(N. $14^{\circ}39'5''$ W. $71^{\circ}51'8''$; N. $5^{\circ}5'3''$ E. $13^{\circ}27'5''$; S. $3^{\circ}55'$
E. $7^{\circ}48'5''$; S. $26^{\circ}3'6''$ E. $93^{\circ}43'7''$, between New
Amsterdam and Sumatra; S. $10^{\circ}8'2''$ E. $97^{\circ}14'9''$;
N. $7^{\circ}1'2''$ E. $85^{\circ}56'5''$, Bengal Bay; N. $4^{\circ}56'$ E. 78°
 $15'3''$, between Ceylon and Chagos; N. $2^{\circ}29'9''$
E. $76^{\circ}47'$; S. $4^{\circ}54'8''$ E. $73^{\circ}24'8''$; S. $6^{\circ}19'3''$ E. $73^{\circ}18'$
 $9''$; S. $4^{\circ}5'8''$ E. $70^{\circ}1'9''$, between Chagos and
Seychelles; S. $2^{\circ}38'7''$ E. $65^{\circ}59'2''$; S. $3^{\circ}24'6''$ E.
 $58^{\circ}38'1''$; S. $3^{\circ}26'2''$ E. $58^{\circ}34'2''$; S. $4^{\circ}34'8''$ E.
 $53^{\circ}42'8''$, between Seychelles and Zanzibar;
S. $4^{\circ}38'6''$ E. $51^{\circ}16'6''$; S. $4^{\circ}45'$ E. $48^{\circ}58'6''$;
N. $9^{\circ}6'1''$ E. $53^{\circ}41'2''$, south of Vokotra;
N. $13^{\circ}2'8''$, E. $46^{\circ}41'6''$). — Zugmayer,

Rés. Camp. Sci. Monaco, vol. 35, 1911, p.
23 (N. $35^{\circ}13'$ W. $8^{\circ}6'$, 1800 meters, off
Morocco). — Pappenheim, Deutsch.

Südpolar Exped., vol. 15, Zool. 7,
1914, p. 193 (N. $00^{\circ}46'$ W. $18^{\circ}59'$, 3000
meters; N. $5^{\circ}27'$ W. $21^{\circ}41'$, 500 meters;
N. $17^{\circ}28'$ W. $29^{\circ}42'$, 3000 meters).

Myctophum laternatum atlanticum
Taaning, Vidensk. Medd. Dansk
naturh. Foren. Kjöbenhavn, vol. 86, 1928,
p. 56. Just inside Strait of Gibraltar.

Depth $3\frac{4}{5}$ to 4; head 3 to $3\frac{1}{3}$, width $2\frac{2}{5}$. Snout 5 to $5\frac{4}{5}$ in head; eye $3\frac{1}{8}$ to $3\frac{2}{5}$, greater than snout or interorbital; maxillary extends but little beyond eye and falls well short of vertical preopercle edge, expansion $2\frac{4}{5}$ in eye, length $1\frac{3}{5}$ to $2\frac{1}{8}$ in head; interorbital 4, low, convex. Gill rakers 4 or 5 + 12, lanceolate, much greater than gill filaments or $1\frac{1}{2}$ in eye.

Scales 32 or 33 in lateral line.

Scales very caducous, cycloid.

Antorbital luminous organ small or large, at upper front eye edge; 2 opercular photophores, upper little larger

and on line with lower eye edge and upper subpectoral; 3 equidistant veiled branchiostegals; 5 pectorals, nearly equidistant; 1 suprapectoral, midway to little low in space between lateral line and pectoral fin origin, though little advanced from latter; 2 subpectorals, lower but slightly below upper little behind second pectoral or before suprapectoral, upper close before lowest pectoral ray bases; 4 ventrals, little arched, equidistant; 1 supraventral, little before first ventral or opposite ventral fin origin and about lowest $\frac{2}{5}$ in space between ventral fin origin

and lateral line; 5 to 7 + 2 or 3 anals, posteroanals behind anal fin base; 3 supraanals, first lowest or midway between last ventral and second supraanal, third on lateral line opposite first anal; 1 posterolateral above or little behind last anteroanal; 2 precaudals, low, together or posterior little higher. Male with large supracaudal luminous plate, female with smaller infracaudal.

D. IV, 8, I, first branched ray $1\frac{1}{4}$ to $1\frac{2}{5}$ in head; adipose fin $2\frac{1}{5}$ to 3; A. III, 13, first branched ray $2\frac{1}{8}$ to $2\frac{1}{4}$; caudal 1 to $1\frac{1}{4}$, well forked; least depth of

3519

caudal peduncle $2\frac{1}{2}$ to $3\frac{1}{8}$; pectoral
 $1\frac{2}{5}$ to $1\frac{1}{2}$; ventral $1\frac{4}{5}$ to $2\frac{1}{3}$.

Brown, darker along edges of body
and some scale pockets. Iris gray,
evidently white in life. Fins pale
brown.

Atlantic, Indian, Antarctic and
Pacific Oceans.

D. 5319. N. $21^{\circ}31'$ E. $117^{\circ}53'$ China³⁵²⁰
Sea, vicinity of Formosa. In 40
fathoms. November 5, 1908. Length 16 to
23 mm. 8 examples.

D. 5437. Hermana Mayor Light, N.
 69° E., 4.9 miles (N. $15^{\circ}45'54''$ E. $119^{\circ}42'45''$),
west coast of Luzon. May 8, 1909. Length
12 to 16 mm. 3 examples.

D. 5227. Point Orizon, S. 44° E., 18.30
miles (N. $12^{\circ}53'45''$ E. $121^{\circ}52'30''$), east of
Mindoro. In 322 fathoms. May 5, 1908.
Length 17 to 24 mm. 5 examples.

D. 5420. Hombrero Island, S. $79^{\circ}30'$
E., 19.2 miles (N. $13^{\circ}45'30''$ E. $120^{\circ}30'15''$),
Balayan Bay and Verde Island Passage,

3524

In 393 fathoms. January 21, 1908.
Length 13 mm.

47636 U.S.N.M. N. $23^{\circ}54'46''$ W. $88^{\circ}58'$.

Blake Collection . Length 34 mm.

74668 U.S.N.M.

Albatross Collection 4909. Length 15 mm.

2 examples.

75801 U.S.N.M. S. $2^{\circ}13'$ W. $89^{\circ}42'$

Albatross Collection 4644. Length 18 to 25 mm.

4 examples.

Myctophum fibulatum Gilbert and Cramer

Myctophum fibulatum Gilbert and Cramer,
Proc. U. S. Nat. Mus., vol. 19, 1896, p. 411.

N. Lat. $21^{\circ}13'$ W. Long. $157^{\circ}43'37''$, in 310
fathoms. — Gilbert, Bull. U. S. Fish Comm.,
vol. 23, pt. 2, 1903 (1905), p. 596 (north of
Molokai, Palolo Channel, north of Maui,
to 284 fathoms; Mem. Carnegie Mus., vol. 6,
no. 2, Aug. 1913, p. 81 (discussion). —

Jordan and Jordan, Mem. Carnegie Mus.,
vol. 10, no. 1, Dec. 1922, p. 11 (reference). —

Parr, Bull. Bingham Oceanogr. Collection,
vol. 3, art. 3, Dec. 1928, p. (61) 67, text fig.

7 (Atlantic records); Proc. U. S. Nat. Mus., vol.

76^{art. 10,}, 1929, p. 7 (type). — Horman, Discovery

3523

Rep., vol. 2, 1930, 325 (S. $35^{\circ}01'$ E. 10°
18', 250 meters). — Fowler, Occas. Pap. Bishop
Mus., vol. 9, no. 18, Feb. 1932, p. 4 (note).

Diaphus chrysorhynchus (not Gilbert and
Cramer) Gilbert and Cramer, Proc. U. S. Nat.
Mus., vol. 19, 1896, pl. 38, fig. 2 (wrongly transposed
on plate).

Myctophum (Myctophum) pterotum (not
Alcock) Brauer, Deutsch. Tiefsee Exped.

Valdivia, vol. 5, Tiefsee-Fische, 1906, p. 182,
fig. 93 (part; 3 Hawaiian examples). —

Barnard, Ann. South African Mus., vol. 21,
pt. 1, 1925, p. 242 (part).

Myctophum pterotum Weber, Siboga Exped.,
vol. 57, Fische, 1913, p. 86 (part). — Weber
and Beaufort, Fishes Indo Austral.

3524

Archipelago, vol. 2, 1913, p. 157 (part).
— Fowler, Mem. Bishop Mus., vol. 10,
1928, p. 70 (part; on Gilbert).

Myctophum hollandi Jordan and Jordan,
Mem. Carnegie Mus., vol. 10, no. 9, 1922,
p. 11, pl. 1, fig. 2. Honolulu. — Parr,
Bull. Bingham Oceanogr. Collection,
vol. 3, art. 3, Dec. 1928, p. 59 (reference).

Myctophum reinhardtii (not Lütken) Fowler,
Mem. Bishop Mus., vol. 10, 1928, p. 70
(part).

[Myctophum fibulatum proximum Parr,
Proc. U. S. Nat. Mus., vol. 76, 1929, p.
8. Tongue of the Ocean, Bahamas.

[Myctophum simile Taaning, Vidensk.
Medd. dansk naturh. Foren. København,
vol. 86, 1928, p. 56. North Atlantic.

Benthosema pinchoti Fowler, Proc. U. S. Nat.
Mus., vol. 80, art. 6, 1932, p. 4, fig. 1. Nukuhiva,
Marquesas Islands.

1415

dark shoulder mark and
dark cross bars on body,
also fins spotted. humeralis
i.³ Scales larger, less than 60
in lateral line.

k.¹ Dorsal and anal spines
very strong, longest of dorsal
longer than rays and
second anal spine much
longer than third.

l.¹ Nostrils close together;
maxillary largely covered
by lip.

m.¹ Seven black blotches on
back and 2 rows of broken
dark blotches. cancellatus

m.² Similar, only markings
all pale or dull gray.

rosenbergii

l.² Nostrils well separated;
maxillary angle not covered
by lip.

3525

Depth $3\frac{2}{3}$ to $4\frac{1}{3}$; head 3 to $3\frac{1}{8}$, width 2 to $2\frac{1}{4}$. Snout $4\frac{2}{3}$ to 7 in head from snout tip; eye $2\frac{3}{5}$ to $3\frac{1}{8}$, greater than snout or interorbital; maxillary reaches well beyond eye though not quite to slightly inclined hind preopercle edge, expansion $2\frac{7}{8}$ to 3 in eye, length $1\frac{1}{2}$ to $1\frac{3}{4}$ in head from snout tip; interorbital $3\frac{2}{3}$ to 4, low, level. Gill rakers 7 or 8 + 17 or 18, lanceolate, slender, $1\frac{2}{5}$ to 2 in eye, subequal with gill filaments.

Scales 28 to 32 in lateral line, not enlarged; 3 above, 3 or 4 below, 11 to 15? predorsal. Pointed axillary pectoral scale $\frac{1}{3}$ fin length. Long pointed scale in ventral axil $\frac{4}{5}$ of fin. Scales with 7 or 8 basal

27613

U. N. S. P. Padang, Sumatra. ¹⁴⁶⁶

A. C. Harrison and H. L. Miller. Length 150 mm. Two examples. When fresh in arrack silvery, upper parts pale brown, lower whitish. Nape deep brown and longitudinal band till behind middle of soft dorsal joined to an indistinct dark band extending along base of fin. Deep brown band from eye along side of body and upper part of caudal peduncle out over caudal to its edge. Pale band from lower side of head through pectoral and over lower side of caudal peduncle to its edge. Fins with more or less whitish and marginal portions of spinous ones with blackish blotch in front. Soft dorsal with several dusky blotches. Caudal lobes with blackish brown blotches or cross bands, that of upper terminal. Anal with dusky

radiating striae; circuli fine,
obsolete apically.

Small antorbital photophore
little above middle of front eye
edge; 2 operculars, upper larger
and level with lower eye edge
and upper subpectoral, lower
above upper end of maxillary
expansion; 3 veiled branchiostegals,
equidistant or median little closer
to posterior; 5 pectorals, last at
ventral base and little elevated,
also last interspace shortest; 1
suprapectoral, well before pectoral
origin or third pectoral or opposite
first subpectoral, also close below
lateral line; 2 subpectorals, first
or lower little lower than upper and
behind second pectoral, upper close
before lowest pectoral ray bases;

[1297] [D. 5386.] Arena Point,
Luzon, $\lambda. 50^{\circ} W.$, 25.3 miles ($13^{\circ} 38' 30''$
 $N.$, $122^{\circ} 44' 30'' E$). March 9, 1909.
Length 123 mm.

3103 [D. 5516.] Point Tagolo Light,
Mindanao. $\lambda. 80^{\circ} W.$, 9.7 miles ($8^{\circ} 46' N.$,
 $123^{\circ} 32' 30'' E$). August 9, 1909.
Length 158 mm.

28673 U.S.N.M. no locality.
Australian Museum. Length 215 mm.

28700 U.S.N.M. no locality.
Australian Museum. Length 223? mm.

42022 U.S.N.M. Port Jackson,
New South Wales. Length 233 mm.

75474 U.S.N.M. Wakanoura, Japan.
Jordan and Snyder. Length 277? mm.

85483 U.S.N.M. Formosa. Dr. F.
Baker. Length 182 mm.

85995 U.S.N.M. Foochow, China.
A. Sowerby.

3527

3^{or 4} ventrals, equidistant, or first close above second; 1 supraventral, about upper third to $\frac{2}{5}$ in space below lateral line to ventral fin base, also slightly posterior from last pectoral; 5 or 6 + 4 or 5 anals, first posteroanal above last anal ray base; 3 supraanals, first opposite third (second in horizontal row) ventral and in horizontal line with second supraanal, which little to well behind last ventral and both little below midway in space below lateral line, third or uppermost close below on lateral line little before second anteroanal; 1 posterolateral, above and little behind last anteroanal; 2 wide set precaudals, first low or close to lower tail edge, upper close below end of lateral line. Male

29764 A.N.S.P. Honolulu, Stanford
University. Length 90 mm.

31795 A.N.S.P. Hawaiian Islands.
Bureau of Fisheries. Length 280 mm.
As Priacanthus meeki.

51390 A.N.S.P. Honolulu, Bishop
Museum. Length 130 mm.

with 3 or 4 luminous supracaudal plates.

D. III or IV, 9, I, first branched ray $1\frac{1}{2}$ to $1\frac{3}{4}$ in total head length; adipose fin $3\frac{1}{8}$ to 5; A. III, 15, I to III, 18, I, first branched ray $1\frac{4}{5}$ to $2\frac{3}{5}$; caudal $1\frac{1}{4}$ to $1\frac{1}{2}$, well forked; least depth of caudal peduncle 3 to $3\frac{3}{4}$; pectoral $1\frac{1}{10}$ to $1\frac{1}{2}$; ventral $2\frac{1}{8}$ to $2\frac{1}{4}$.

Brown, where scales have fallen pockets often dusky, also bases of vertical fins. Belly blackish. Scales with brilliant metallic luster, silvery. Fins all pale. Iris silvery white.

East Indies, Hawaiian Islands, Bahamas. Gilbert says a characteristic feature of the species are the 3 equally spaced pairs of ventral photophores

Priacanthus tayenus Richardson

Priacanthus tayenus Richardson, Ichth.
China Japan, 1846, p. 237. Canton, China. —
Günther, Cat. Fishes Brit. Mus., vol. 1, 1859,
p. 221 (Canton). — Bleeker, Atlas Ichth.
Ind. Néerl., vol. 7, 1873-76, p. 12 (Java,
Sumatra, Singapore, Banka, Celebes,
Amboina); vol. 8, 1876-77, pl. (71) 349, fig. 4.
— Sauvage, Bull. Soc. Philomath. Paris,
series 7, vol. 5, 1881, p. 104 (Swatow, China).
— Boulenger, Cat. Fishes Brit. Mus., vol. 1,
1895, p. 355 (Canton; Madras; Sumatra). —
Elera, Cat. Fauna Filip^{vol. 2,}, 1895, p. 467
(Luzon, Ilocos, Vigan, Marinduque,
Mindoro, Calapan). — Fowler, Journ. Acad.
Nat. Sci. Phila., series 2, vol. 12, 1904, p.
524 (Padang). — Jordan and Seale,
Proc. Lavenport Acad. Sci., vol. 10, 1905,
p. 10 (Hong Kong); Proc. U. S. Nat. Mus.,
vol. 29, 1906, p. 521 (Hong Kong). — Jordan

along the median line.

Scopelus brachygnathus Bleeker, to judge from the incomplete figure and description, is surely closer to Dasy Scopelus pristilepis Gilbert and Cramer.

Myctophum hollandi Jordan and Jordan appears to me to be so close to the present species that I find only one feature of possible distinction and that is in the absence of the superimposed ^{photophore} (really the first pair of ventral photophores according to Gilbert) over the first ventral photophore. The incomplete figure 93 of Brauer, wrongly identified as Myctophum (Myctophum) pterotum, shows the arrangement of these photophores for Myctophum fibulatum most distinctly.

and Richardson, Mem. Carnegie Mus.,
vol. 4, no. 4, August 28, 1909, p. 192
(Takao, Formosa). — Fowler, Copeia, no. 58,
June 18, 1918, p. 63 (Philippines). — Fowler
and Bean, Proc. U. S. Nat. Mus., vol. 62,
1922, p. 26 (Takao). — Fowler, Proc.
Acad. Nat. Sci. Philadelphia, 1927, p. 276
(Philippines).

Priacanthus holocentrum Bleeker, Verh.
Batav. Genoot. (Percoid.), vol. 22, 1849, p.
48. Batavia. — Günther, Cat. Fishes Brit.
Mus., vol. 1, 1859, p. 220 (Sumatra). —
Károli, Termésez. Füzetek, Budapest, vol. 5, 1881, p. 151 (Kobe, Japan).
— Day, Fishes of India, Suppl., 1888, p. 784;
Fauna British India, Fishes, vol. 1, 1889,
p. 482 (not fig. 148). — Elera, Cat. Fauna
Filip., vol. 2, 1895 (Luzon, Cavite, Santa
Cruz, Paragua, Puerta Princesa).
Priacanthus schmitti Bleeker, Nat. Tijds.
Nederl. Indie, vol. 3, 1852, p. 572. Padang.
— Günther, Cat. Fishes Brit. Mus., vol. 1, 1859,

3530

Of these ^{the} anterior one is absent in Jordan and Jordan's figure of Myctophum hollandi, though in every other respect the arrangement of the other photophores is almost exactly as in Brauer's figure. Comparing Gilbert and Cramer's figure 2 of Diaphus chrysorhynchus (which wrongly transposed with their figure 3 called Myctophum fibulatum) it very easily be seen that Myctophum hollandi is similarly close. Another feature is the statement by Jordan and Jordan "Supraventral (VLO) wanting" though their figure shows it clearly and located as in Brauer's figure. Further the position of the inclined plane of the 2 anterior

supraanal photophores is in agreement with all the figures compared. Finally the discrepancy in the description of Myctophum hollandi as already pointed out, may it not be that the scale containing the first or anterior supraanal photophore may have been lost? Another minor point of difference for Myctophum hollandi is the anterior position of the median branchiostegal photophore, though as I have found this variable in other species of the genus conclude it may also be a variant here. Myctophum hollandi is said to have D. I, 12 though the figure shows III, 10, I; the A. given as I, 17 is figured III, 16, I. A still further resemblance of Myctophum hollandi

p. 220 (copied).

Priacanthus poecilopterus Günther, Cat.

Fishes Brit. Mus., vol. 1, 1859, p. 220.

Sumatra. (name in text.)

Depth $2\frac{3}{4}$ to $2\frac{7}{8}$; head $2\frac{5}{6}$ to 3, width $1\frac{7}{8}$ to 2. Snout $3\frac{2}{5}$ to $3\frac{4}{5}$ in head from snout tip; eye $1\frac{7}{8}$ to $2\frac{1}{4}$, greater than snout or interorbital; maxillary reaches $\frac{1}{4}$ to $\frac{2}{5}$ in eye, expansion 2 to $2\frac{1}{8}$, length $1\frac{4}{5}$ to $1\frac{7}{8}$ in head from snout tip; teeth in narrow bands, fine, simple, conic, in jaws and on vomer, none on palate or tongue; interorbital $4\frac{1}{8}$ to $4\frac{1}{3}$, nearly level; preopercle spine $2\frac{1}{2}$ to 3 in eye. Gill rakers 4 + 17 or 18, lanceolate, $2\frac{3}{4}$ in eye; gill filaments $\frac{4}{5}$ in gill rakers.

Scales 68 to 70 counted along and above lateral line to caudal base

with Myctophum fibulatum is the elevated upper opercular photophore nearly level with the lower edge of the eye and the upper subpectoral, though not well shown in Parr's figure of Myctophum fibulatum.

Benthosemia pinchoti seems to be an aberrant example of the present species, differing only slightly in the suprapectoral photophore placed on the beginning of the lateral line, 4 posteroanals and 21 lower gill rakers.

of soft dorsal base; third usually from upper front part of opercle to below last dorsal rays or caudal peduncle above, rarely starting at middle of hind eye edge; fourth sometimes on preorbital above middle of maxillary, then along lower eye edge and back over ^{pectoral base} to caudal base medially; imperfect fifth band may even start below eye or be obscure along lower side of abdomen or above anal. Dorsal light yellowish brown, both fins usually with rather broad dark border. Caudal dull brown or yellowish. Other fins all yellowish. Diffuse blackish blotch little smaller than eye above lateral line below front of soft dorsal in young.

3533

D. 5530. Balicasag Island (C.),
N. 32° E., 4.3 miles (N. $9^{\circ} 26' 45''$ E.
 $123^{\circ} 38' 30''$), between Siquijor and
Bohol Islands. August 11, 1909.
Length 24 mm.

D. 5604. Bilatu (town), N. 26° W.,
8.7 miles (N. $0^{\circ} 22' 30''$ E. $122^{\circ} 42' 30''$),
Gulf of Tomini, Celebes. November
15, 1909. Length 19 mm. 5 examples.

D. 5320. China Sea vicinity of
Formosa (N. $20^{\circ} 58'$ E. $120^{\circ} 03'$). In
1804 fathoms. November 6, 1908.
Length 17 mm.

D. 5365. Cape SANTIAGO Light, N. 73°
W., 6.7 miles (N. $13^{\circ} 44' 24''$ E. $120^{\circ} 45' 30''$),
Balayan Bay, Luzon. In 214 fathoms.
February 22, 1909. Length 88 mm.

bands.

g.¹ Scales smaller, 58 to 68 along below lateral line, 63 to 67 along above. hillii

g.² Scales larger, 48 to 56 along below lateral line, 51 to 61 along above.

h.¹ Head 3 to $3\frac{1}{2}$; base of each scale on back with dark spot. parviceps

h.² Head $2\frac{3}{5}$ to $2\frac{3}{4}$; obscure dark spots size of pupil all over body.

f.² Head larger, $\frac{1}{3}$ or over in length to hypural; 7 dark parallel horizontal bands, also some dark spots or short dark bars at caudal base. kenneri

e.² Dorsal spines usually 12. micracanthus

i.¹ Scales smaller, 75 to 70 in lateral line.

f.¹ Nostrils close together; nearly uniform. bideana

f.² Nostrils widely separated;

3534

D. 5564. Dammi Island (N.), S.
85°W., 6.1 miles (N. 5°50'00" E. 120°31'
00"), between Jolo and Tawi Tawi.

In 236 fathoms. September 21, 1909.

Length 65 to 71 mm. 3 examples.

D. 5176. Escarceo Light, S. 57° E., 7 miles
(N. 13°35'15" E. 120°53'20"), Verde Island
Passage. In 260 fathoms. March 24, 1908.

Length 37 to 60 mm. 8 examples.

D. 5291. Escarceo Light, N. 39° W., 2.20
miles (N. 13°29'40" E. 121°00'45"), China
Sea, vicinity southern Luzon. In 173 fathoms.
July 23, 1908. Length 70 to 77 mm. 2 examples.

vol. 21, pt. 1, 1925, p. 242 (part).

Myctophum pterotum Weber, Siboga

Exped., vol. 57, Fische, 1913, p. 86 (part).

— Weber and Beaufort, Fishes Indo
Austral. Archipelago, vol. 2, 1913, p. 157
(part). — Fowler, Mem. Bishop Mus.,

vol. 10, 1928, p. 70 (part; on Gilbert).

Myctophum fibulatum proximum Parr,

Proc. U. S. Nat. Mus., vol. 76, 1929, p. 8.

Tongue of the Ocean, Bahamas.

D. 5293. Escarceo Light, N. 59° W., 6 miles (N. $13^{\circ} 28' 15''$ ~~W.~~ E. $121^{\circ} 04' 30''$), China Sea, vicinity southern Luzon. In 180 fathoms. July 23, 1908. Length 58 mm.

D. 5230. Limasawa Island (S.), S. 68° E., 22.50 miles (N. $10^{\circ} 01' 50''$ E. $124^{\circ} 42' 30''$), between Bohol and Leyte. In 118 fathoms. ^{May 7, 1908.} Length 50 mm.

D. 5224. Malabrigo Light, N. 79° W., 6.25 miles (N. $13^{\circ} 34' 50''$ E. $121^{\circ} 21' 45''$), between Marinduque and Luzon. April 24, 1908. Length 13 to 16 mm. 4 examples.

D. 5280. Malavatuan Island (N.), S. 60° W., 6.10 miles (N. $13^{\circ} 55' 20''$ E. $120^{\circ} 25' 55''$), China Sea vicinity southern Luzon. In 193 fathoms. July 17, 1908. Length 65 to 80 mm. 17 examples.

or similarly curved. farbua

b.² Eutherapon. Scales smaller, 13 to 15 above lateral line; median dark band from eye to caudal peduncle above and then out over supero median caudal rays; below parallel band from pectoral axil and another on back. theraps

a.² Lower opercular spine smaller, reaches little beyond opercle lobe; no dark blotch on spinous dorsal; no oblique dark bands on caudal.

d.¹ Mesopristes. Suprascapula exposed, not hidden by scales.

e.¹ Dorsal spines normally 13.

f.¹ Head smaller, less than $\frac{1}{3}$ of length to hypural; nearly uniform, no horizontal dark

3536

D. 5267. Matocot Point, S., 39° E.,
5.50 miles ($N. 13^{\circ} 42' 20''$ E., $120^{\circ} 58' 25''$),
Verde Island Passage and Batangas Bay.
In 170 fathoms. June 8, 1908. Length 48 mm.

D. 5268. Matocot Point, S. 50° E., 5.80
miles ($N. 13^{\circ} 42'$ E., $120^{\circ} 57' 15''$). In 170 fathoms.
June 8, 1908. Length 57 to 67 mm. 4 examples.

D. 5297. Matocot Point, S. 50° E., 5.10
miles ($N. 13^{\circ} 41' 20''$ E., $120^{\circ} 58'$), China
Sea vicinity southern Luzon. In 198 fathoms.
July 24, 1908. Length 55 to 67 mm. 2 examples.

D. 5649. North Island (S.), $N. 87^{\circ}$ E.,
22 miles ($S. 5^{\circ} 36' 00''$ E., $122^{\circ} 07' 36''$), Buton
Strait. December 15, 1909. Length 15 to 37
mm. 28 examples.

Myctophum hollandi Jordan and Jordan

? Myctophum hollandi Jordan and Jordan,

Mem. Carnegie Mus., vol. 10, no. 9, 1922, p. 11,

pl. 1, fig. 2. Honolulu. — Parr, Bull. Bingham

Oceanogr. Collection, vol. 3, art. 3, Dec. 1928,

p. 59 (reference).

Myctophum reinhardtii (not Lütken) Fowler,

Mem. Bishop Mus., vol. 10, 1928, p. 70 (part).

D. 5228. Romblon Light, N. 3° E.,
6.25 miles (N. $12^{\circ} 29' 30''$ E. $122^{\circ} 15' 45''$),
south of Romblon. May 5, 1908. Length
15 to 22 mm. 26 examples.

D. 5579. Sibutu Island peak, S.
 77° E. 20.3 miles (N. $4^{\circ} 54' 15''$ E. 119°
 $09' 52''$), vicinity Darvel Bay, Borneo.
In 175 ~~meters~~^{fathoms}. September 25, 1909.
Length 49 to 65 mm. 3 examples.

D. 5580. Sibutu Island peak, S.
 82° E., 23.2 miles (N. $4^{\circ} 52' 45''$ E. 119°
 $06' 45''$). In 162 fathoms. September
25, 1909. Length 45 to 59 mm. 4 examples.

3 examples. Varadero Bay, Mindoro.
July 23, 1908. Electric light 12.30 to
1.45 A.M. Length 77 to 83 mm.

4 examples. Varadero ~~Bay~~ Harbor.
July 22, 1908. Electric light 11.33 P.M.
to 12.30 A.M. Length 75 to 85 mm.

11.

carbo

(1417)

g.² Caudal emarginate;
anal rays 8 to 10.

r.¹ Scales 46 to 50 along
below lateral line.

fuliginosus

r.² Scales 51 or 52 along
below lateral line.

bancrofti

d.² Leiopotherapon new subgenus.
Suprascapula not exposed,
hidden by scales.

s.¹ Dorsal spines 13.

t.¹ Scales 33 to 38; 5
narrow dark cross
bars.

percoides

t.² Scales 52 to 56;
caudal with broad
oblique bar on each
lobe.

caudovittatus

s.² Dorsal spines 12, rarely
11 or 13; nearly uniform
or with small dark spots.

47714 U.S.N.M.

3538

Albatross Collection 3467. Length 101 mm.
Type. Though most of squamation
gone an excellent specimen.

89714 U.S.N.M. N. 24° 29' W. 77° 29'.
Bingham Oceanographic Collection.
March 14, 1927. ~~Parat~~ Length 25 mm.
Paratype of Myctophum fibulatum
proximum.

1416
n. Caudal emarginate.

o. Preorbital serrate;
dorsal rays 10.

p. Eye $1\frac{1}{3}$ to $1\frac{2}{3}$ in
snout; upper profile
concave with age.

p.² Eye subequal with
snout; upper profile
slightly convex. argentus
lambertoni

o.² Preorbital not serrate;
dorsal rays 13. alligatoris

m.² Caudal truncate; eye $1\frac{1}{5}$
in snout; preorbital serrate;
dorsal rays 10. elongatus

k. Dorsal and anal spines
weaker, longest of dorsal
not longer than rays and
second anal spine not or
but little longer than third.

g. Caudal slightly
rounded; anal rays

Myctophum cocco (Cocco).

Scopellus cocco Cocco, Giorn. Sci. Sicilia,
vol. 26, 1829, p. 77. Sicily; Isis, vol. 24,
1831, p. 1341 (Messina).

Scopelus cocco Bonaparte, Iconog. Fauna
Italica, Pesc., vol. 3, pt. 1, fasc. 27, 1840,
description, pl., fig. 6 (Sicily).

materials; types of Myctophum hians
Fishes of Zanzibar, 1866, p. 116 (east coast of Africa).
and Alysia coruscans — Schmeltz, Cat.

— Canestrini, Fauna Italia, Pesc., 1874, p. 123
(Sicily). — Schmeltz, Cat. Mus. Godeffroy,

Ocean). No. 6, 1877, p. 17 (Pacific Ocean). —

Günther, Rep. Voy. Challenger, vol. 31, pt. 2,
1889, p. 30 (south Atlantic; south Pacific;

— Collett, Res. Camp. Sci. Monaco, vol. 10, 1896, p. 116
(west of Azores; south of Flores).

passage to Japan). — Sechura, marine

Investigat. South Africa, vol. 4, 1908, p. 165

Myctophum cocco (Cocco).

Scopellus cocco Cocco, Giorn. Sci. Sicilia,

vol. 26, 1829, p. 77. Sicily; Isis, vol. 24,

1831, p. 1341 (Messina).

Scopelus cocconi Günther, Cat. Fish. Brit.

Mus., vol. 5, 1864, p. 413 (Atlantic).

materials; types of Myctophum hians

Fishes of Zanzibar, 1866, p. 116 (east coast of Africa).

and Alysia coruscans)₁ — Schmeltz, Cat.

Mus. Godeffroy, no. 5, 1874, p. 35 (Pacific

Ocean). no. 6, 1877, p. 17 (Pacific Ocean). —

Günther, Rep. Voy. Challenger, vol. 31, pt. 2,

1889, p. 30 (south Atlantic; south Pacific;

mid Pacific; near Admiralty Islands;

passage to Japan).₁ — Gilchrist, Marine

Investigat. South Africa, vol. 4, 1908, p. 165

22 3539a

(). — Thompson, Marine
Biolog. Rep. South Africa, no. 3, 1916, p.
83 ().

Scopelus (Rhinoscopelus) cocoi Lütken,
Kon. Dansk. Vidensk. Selsk. Skrift.
Kjöbenhavn, ser. 2, vol. 7, 1892, p. 242, fig. 2
(Atlantic materials; Zanzibar; Timor; Bay
of Bengal; north of Australia; east coast
Australia; south part Pacific; off Caroline).

Rhinoscopelus cocoi Goode and Bean,
Oceanic Ichth., 1895, p. 90, pl. 28, fig. 104

(Atlantic materials). — Jordan and Evermann, Bull.
U. S. Nat. Mus., no. 47, pt. 1, 1896, p. 568 (compiled).

Rhinoscopelus cocco Fowler, Proc. Acad.
Nat. Sci. Philadelphia, 1911 (1912), p. 570

(Atlantic materials); Mem. Bishop

mus., vol. 10, 1928, p. 70, fig. 14 (young)³⁵⁴⁰.
Myctophum cocoi Brauer, Zool.
Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904,
p. 390 (diagnosis in key). — Weber and
Beaufort, Fishes Indo Austral. Archipelago,
vol. 2, 1913, p. 158, fig. 61 (compiled). —
Regan, Fishes Brit. Antarctic "Terra
Nova" Exped., Nat. Hist. Rep., Zool., vol. 1,
no. 4, 1916, p. 139 (off Three Kings Islands,
in 3 meters). — Taaning, Rep. Danish
Oceanogr. Exped. Mediterranean, no. 5, 1918,
p. 67, figs. 23-24 (Mediterranean; Atlantic);
Vidensk. Medd. Dansk Naturh. Foren.,
Kjöbenhavn, vol. 86, 1928, p. 55 (diagnosis
in key).

vol. 3, art. 3, Dec. 1928, p. 66 (compiled).

Myctophum (Myctophum) benoiti Branner,

Deutsch Tiefsee Exped. Valdivia, vol. 5,

Tiefsee-Fische, 1906, p. 183, text fig. 95,

(Azores, Madeira, Canaries, Gulf of Guinea, Mediterranean).

— Zugmayer, Rep. Camp. Sci. Monaco, vol. 35, 1911, p. 25 (south west of Azores, 3000 meters). — Hjort, The Depths of the Ocean, 1912, p. 613 (off Morocco).

— Parr, Bull. Bingham Oceanogr.
Collection, vol. 3, art. 3, Dec. 1928, p. 61

(note). — Norman, Discovery Rep., vol.
2, 1930, p. 325 ($S. 33^{\circ}53'45'' E. 9^{\circ}26'30''$,
1000 meters; $S. 37^{\circ}20' W. 12^{\circ}47'30''$, 100
to 115 meters).

Alysia loricata Lowe, Proc. Zool.
Soc. London, 1839, p. 87. Madeira.
Myctophum coruscans Richardson,
Ichth. Voy. Erebus and Terror,
1844-48, p. 40, pl. 27, figs. 1-5. Between
St. Helena and Ascension Island;
between Australia and New Zealand.
— Goode and Bean, Oceanic Ichth.,
1895, p. 89 (reference).

Scopelus coruscans Hutton, Trans. New
Zealand Inst., vol. 5, 1872 (1873), p.
270 (compiled). — Macleay, Proc.
Linn. Soc. New South Wales, vol. 6,
1881, p. 224

Mus., vol. 10, 1928, p. 70, fig. 14 (young)
(compiled).

Myctophum (Myctophum) cocconi Branner,
Deutsch. Tiefsee Exped. Valdivia, vol. 5,
Tiefsee-Fische, 1906, p. 199, text figs. 116 -
120 (Atlantic, Indian, Pacific Oceans).
— Barnard, Ann. South African Mus.,
vol. 21, pt. 1, June 1925, p. 244 (off Cape
Point).

Myctophum cocconi Weber and Beaufort,
Fishes Indo Austral. Archipelago, vol.
2, 1913, p. 158, fig. 61 (compiled). — Regan,
Fishes Brit. Antarctic "Terra Nova" Exped.,
Nat. Hist. Rep., Zool., vol. 1, ^{no. 4,} 1916, ~~1916~~ p. 139
(off Three Kings Islands, in 3 meters).
→

(copied).

3543

Rhinoscopelus coruscans Waite, Records
Canterbury Mus., vol. 1, no. 1, April 25,
1907, p. 13 (reference).

Myctophum hians Richardson, Ichth.
Voy. Erebus and Terror, 1844-48, p. 41,
pl. 27, figs. 19-21. No locality.

Myctophum (Myctophum) hians Brauer,
Deutsch. Tiefsee Exped. Valdivia, vol. 5,
Tiefsee-Fische, 1906, p. 194, text fig. 112
(south of Cape Colony, S. Lat. $37^{\circ}31'4''$ E.
Long. $17^{\circ}1'6''$). — Barnard, Ann. South
African Mus., vol. 21, pt. 1, June 1925, p.
244 (compiled).

Scopelus gracilis Lütken, Kon. Dansk.
Vidensk. Selsk. Skrift. Kjöbenhavn,
ser. 2, vol. 7, 1892, p. 255, fig. 13.

North of Cape Verde Islands; mid Atlantic;
south of Madagascar, S. Lat. $35^{\circ}36'$ E. Long.
 $27^{\circ}40'$

Myctophum gracile Goode and Bean,
Oceanic Ichth., 1895, p. 74 (compiled).

Myctophum tenuiculum Garman, Mem.
Mus. Comp. Zool., vol. 24, 1899, p. 262, pl.
J., fig. 5. San Mariato Point, in 100
fathoms (Gulf of Panama).

Rhinoscopelus tenuiculus Gilbert, Mem.
Mus. Comp. Zool., vol. 26, no. 6, 1908, p.
222 (N. Lat. $10^{\circ}57'35''$ W. Long. $137^{\circ}35'25''$);

Bull. Amer. Mus. Nat. Hist. New York,
vol. 30, art. 2, March 10, 1911, p. 15 (midway
between Galapagos and Marquesas Islands).

— Jordan and Jordan, Mem. Carnegie Mus.,
vol. 10, no. 1, Dec. 1922, p. 11 (reference). —

Fowler, Mem. Bishop Mus., vol. 10, 1928,
p. 71 (compiled).

3546

Depth $4\frac{1}{4}$ to 5; head $3\frac{3}{4}$ to $4\frac{1}{8}$, width $2\frac{1}{2}$ to $3\frac{1}{5}$. Snout $4\frac{1}{5}$ to $5\frac{1}{4}$ in head; eye $3\frac{1}{4}$ to $3\frac{3}{4}$, greater than snout, subequal with interorbital; maxillary reaches well beyond eye, not quite reaching slightly inclined hind preopercle edge, slender, length $1\frac{1}{4}$ to $1\frac{3}{5}$ in head; interorbital $2\frac{3}{4}$ to $3\frac{1}{2}$ in head, well convex. Gill rakers 3 to 6 + 7 to 10, slender, lanceolate, 1 to $1\frac{1}{4}$ in eye, subequal with gill filaments.

Scales 37 to 40 in lateral line, enlarged, with distinct tubes; 2 or 3 above, 3 or 4 below, 17 or 18 predorsal. Anterior bases of dorsal and anal,

also caudal base, scaly. Apparently no enlarged or pointed scale in ventral axil. Scales with 4 or 5 basal radiating striae; circuli fine, obsolete apically.

Two small antorbital photophores, upper at upper front eye edge well above pupil and lower well below lower pupil edge; 2 operculars, upper larger, lower often veiled; 3 veiled equidistant branchiostegals; 5 pectorals, equidistant; 1 suprapectoral, close before and above pectoral origin; 2 subpectorals, lower or first nearly midway between upper and second

pectoral and opposite and little
before suprapectoral, upper at
bases of lowest pectoral rays; 4
ventrals; 1 supraventral, little lower than
upper subpectoral or slightly before
first ventral; 5 or 6 + 10 to 14 anals;
3 supraanals, first or lowest level
with supraventral and little behind
second or before third ventral, second
little higher than first or before or
opposite last ventral and uppermost
close below lateral line little before
to opposite anal origin; 1 posterolateral,
close below lateral line and little
behind last anteroanal; 2 or 3 precaudals,

close together along lower edge of tail.
 males with 6 to 8 supracaudal luminous
 plates; female with 4 to 6 infracaudals.

D. III, 8, I, first branched ray $1\frac{1}{2}$ to
 2 in head; adipose fin $2\frac{2}{5}$ to $3\frac{1}{3}$; A.
III, 16, I to III, 19, I, first branched ray
 $1\frac{2}{3}$ to $2\frac{1}{10}$; caudal $1\frac{1}{3}$ to $1\frac{2}{5}$, deeply
 forked; least depth of caudal peduncle
 5 to 7; pectoral $1\frac{3}{5}$ to $1\frac{2}{3}$; ventral $1\frac{4}{5}$
 to $2\frac{1}{2}$.

Largely dark brown, paler below.
 Sides of head and trunk silvery, all
 with metallic or iridescent luster.
 Iris pale, silvery. Photophores usually
 all pearly, with dusky or blackish

edges. Fins pale brown to whitish, caudal largely dusky basally.

Atlantic, Indian and Pacific Oceans). One of the best known species, distinguished by its tapering body and long slender caudal peduncle, firmly iridescent scales, the dorsal fin well advanced and the snout strongly protruded. Brauer gives the anal photophores 4 to 8 + 9 to 14. According to Jaaning the vertebral 40 or 41.

38191 U.S.N.M. N. 36° W. 74°
Albatross Station 2731.
Length 24 to 50 mm. 150 examples.

43810 U.S.N.M.

Albatross Collection 2584. Length 31 mm.

2 examples.

43812 U.S.N.M.

Albatross Collection 2566. Length 29 to 40 mm.

2 examples.

43813 U.S.N.M.

Albatross Collection 2571. Length 31 to 47 mm.

5 examples.

43814 U.S.N.M.

Albatross Collection 2569. Length 42 to 48 mm.

2 examples.

43815 U.S.N.M.

Albatross Collection 2566. Length 22 to 46 mm.

4 examples.

43817 U.S.N.M.

Albatross Collection 2381. Length 36 to 44 mm. 2 examples.

43818 U.S.N.M. N. $40^{\circ}24'18''$ W. $66^{\circ}09'00''$

Albatross Collection 2573. Length 38 mm.

43819 U.S.N.M. N. $42^{\circ}20'$ W. $65^{\circ}07'30''$. Albatross Station 2522, Length ^{43 mm.}

43820 U.S.N.M. N. 39° W. 72°

Albatross Collection. Length 22 to 46 mm.

62 examples.

43820 U.S.N.M. N. 39° W. 72°

Albatross Collection. Length 39 to 42 mm.

2 examples.

43821 U.S.N.M.

Albatross Collection. Length 24 to 46 mm.

21 examples.

43822 U.S.N.M. N. 39°

W. 72°

Albatross Collection

Length 23 to

45 mm. 12 examples.

43823 U.S.N.M.

Albatross Collection 2727. Length 30 to 51 mm.

44 examples.

74329 U.S.N.M.

Albatross Collection 2682. Length 28 to 43 mm.

21 examples.

76526 U.S.N.M. N. 38°20' W. 70°08'30"

Albatross Collection 2713. Length 26 to 30 mm.

2 examples.

A.N.S.P. no locality. Obtained by

U. S. S. Constitution. August 22, 1884. Dr. W. H.

Jones. Length 38 mm.

to

A.N.S.P. N. $39^{\circ}50'45''$

W. $71^{\circ}43'$, at surface. September 18, 1885.

U.S. Bur. Fisheries 2583. Length to mm.

to

A.N.S.P. Between

Norfolk, Virginia, and Cape Verde Islands

and Montevideo, Uruguay. At surface.

1891-1892. Dr. W. H. Rush. Length to mm.

to

A.N.S.P. S. 20° W. 75° .

Dr. B. Sharp. Length to mm.

Myxopneustes nigroocellatus (Günther)

Scopelus nigro-ocellatus Günther,
Journ. Mus. Godeffroy, vol. 4,
1873, p. 91. South Atlantic; Rep.
Voy. Challenger, vol. 31, pt. 2, 1889,
p. 30 (type; Admiralty Islands
Island). ✓

— Lütken, Kon. Dansk. Vidensk.
Selsk. Skrift. Kjöbenhavn, ser. 6,
vol. 7, no. 6, 1892, p. 246 (reference).
Lüning,

Diagnosis in (see)
(North Atlantic). — Parr, Bull. Bingham
Oceanogr. Collection, vol. 3, art. 3, 1928,
p. 62 (compiled); Proc. U. S. Nat. Mus.,
vol. 76, 1929, p. 9 (compiled). — Horman,
Ann. Mag. Nat. Hist., ser. 10, vol. 4,
Nov. 1929, p. 514 (Zanzibar; north of
Admiralty Island; Volcano Island;
type of Scopelus indicus). — Fowler,
Occas. Pap. Bishop Mus., vol. 9, no. 18, Feb. 1932,
p. 4 (reference).

Mystophum nigroocellatum (Günther)

Scopelus nigro-ocellatus Günther,
Journ. Mus. Godeffroy, vol. 4,
1873, p. 91. South Atlantic; Rep.
Voy. Challenger, vol. 31, pt. 2, 1889,
p. 30 (type; Admiralty Islands
to Japan). ✓

Mystophum nigro-ocellatum Taaning,
vidensk. Medd. Dansk Naturhist.

Foren., Copenhagen, vol. 86, 1928, p. 55
(North Atlantic, ^{diagnoses in (key)} — Farr, Bull. Bingham
Oceanogr. Collection, vol. 3, art. 3, 1928,
p. 62 (compiled); Proc. U. S. Nat. Mus.,
vol. 76, 1929, p. 9 (compiled). — Norman,
Ann. Mag. Nat. Hist., ser. 10, vol. 4,
Nov. 1929, p. 514 (Zanzibar; north of
Admiralty Island; Volcano Island;
type of Scopelus indicus) — Fowler,
Occas. Pap. Bishop Mus., vol. 9, no. 18, Feb. 1932,
p. 4 (reference).

Lutianus salmonoides Gilchrist and
Thompson, Annals South African Mus.,
vol. 6, 1908, p. 146. Natal, East London,
Annals Durban Mus., vol. 1, pt. 4, 1917,
p. 345 (copied).

Lutianus rivulatus (not Cuvier) Seale
and Bean, Proc. U. S. Nat. Mus., vol.
33, 1907, p. 243 (one Zamboanga specimen).

3556

Scopelus indicus Day, Fishes of
India, pt. 3, 1877, p. 507, pl. 118,

fig. 2. Vizagapatam.

Scopelus coccoi (not Cocco) Günther,
Rep. Voy. Challenger, vol. 31, pt. 2,
1889, p. 30 (near Admiralty Islands;
part).

Myctophum coruscans (not Richardson)
Fowler, Proc. Acad. Nat. Sci. Philadelphia,
1899, p. 498 (Hawaiian specimen).

Rhinoscopelus oceanicus (part) Jordan and
Evermann, Bull. U. S. Fish Comm., vol. 22, 1902
(1903), p. 168 (copied).

Centrobranchus choerocephalus Fowler,
Proc. Acad. Nat. Sci. Philadelphia,
1903, p. 754. Hawaiian Islands. —
Gilbert, Bull. U. S. Fish Comm., vol.
23, pt. 2, 1903 (1905), p. 594, pl. 69,
fig. 1 (south of Oahu, off Nihoa,
French Frigates Shoal; Laysan; east
of Kauai; between Honolulu and
San Francisco). — Gilbert, Mem.
Mus. Comp. Zool., vol. 26, no. 6, 1908, p.
224 (S. Lat. $16^{\circ} 39'$ W. Long. $149^{\circ} 11'$).
— Fowler, Proc. Acad. Nat. Sci.
Philadelphia, 1911 (1912), p. 570
(types); Copeia, no. 112, Nov. 20, 1922,
p. 82 (Hawaii). — Jordan and Jordan,
Mem. Carnegie Mus., vol. 10, no. 1, Dec.
1922, p. 12 (reference). — Fowler,
Mem. Bishop Mus., vol. 10, 1928, p. 67
(types; Hawaii).

~~8292, 19843, 19844, 20211, 20212. Olimango Bay, Burias Island. March 5, 1909. Length 150 to 270 mm.~~

~~7211, 7212. Aparri market. November 19, 1908. Length 348 to 438 mm.~~

~~20492. Bagaong River, Tablayan Bay, Mindoro. December 13, 1908. Length 66 mm.~~

~~22038 to 22040. Basud River, Luzon. June 15, 1909. Length 37 to 57 mm.~~

~~5852. Below Mindanao River mouth, Mindanao. May 20, 1908. Length 494 mm.~~

~~8480. Brackish river at Port Dupon, Leyte. March 17, 1909. Length 183 mm.~~

~~19112, 19113. Buena Vista, Guimaras Island, Iloilo Strait. January 14, 1909. Length 68 to 143 mm.~~

~~8268, 8269, 8285. Cannahala Bay, Ragay Gulf, Luzon. March 11, 1909. Length 293 to 433 mm.~~

5271. Cavite. March 23, 1908. Length 421 mm.

5037. Cotabato, Mindanao. Length 152 mm.

Myctophum (Myctophum) choerocephalum
Brauer, Deutsch. Tiefsee Exped.
Valdivia, vol. 15, Tiefsee-Fische, 1906,
 p. 202, fig. 121 (Atlantic, Indian,
 Pacific Oceans).

Myctophum ~~(Myctophum)~~ cocoi forma
regularis Brauer, Zool. Anzeiger,
 vol. 28, Nr. 10, Dec. 20, 1904, p. 390.
 (diagnosis in key).

smaller on caudal, 40 in lateral series. D. $\overline{\text{X}}$, 13, fourth spine longest; mid soft $\overline{\text{dorsal}}$ rays longest. A. $\overline{\text{III}}$, 9, second spine very strong, not long as third; first rays longest, giving truncate appearance behind. Caudal slightly emarginate. Pectoral almost reaches vent, beyond ends of ventrals. Head and body above bluish silvery, with vertical pearly marks on each scale and below rosy pink. Length 459 mm.

Mesoprion rangus Cuvier, as understood by Bleeker, differs only in color, his figure showing yellow lines on the body.

Depth $4\frac{2}{5}$ to 5; head $3\frac{2}{5}$ to $3\frac{7}{8}$, width $2\frac{1}{3}$ to $2\frac{1}{2}$. Snout $4\frac{1}{2}$ in head; eye $3\frac{1}{2}$ to $3\frac{2}{3}$, subequal with prominent snout or interorbital; maxillary reaches well beyond eye though not quite to inclined hind preopercle edge, slender, length $1\frac{2}{5}$ to $1\frac{3}{4}$; interorbital $3\frac{2}{5}$ to $3\frac{1}{2}$, convex. Gill rakers 3+5, clusters of small prickles; gill filaments short.

Scales 35 to 39 in median lateral series, without tubes; 6 to 8 series transversely. Bases of dorsal and anal anteriorly, also caudal base, scaly. Scales mostly entire, cycloid.

One or 2 minute antorbital photophores,
upper at upper front eye edge and
lower rather low; 2 operculars, upper
above end of maxillary, lower veiled;
3 veiled equidistant branchiostegals; 5
pectorals, equidistant; 1 suprapectoral,
close before or at pectoral origin; 2
subpectorals, lower little before suprapectoral
or little behind second pectoral or about
midway between latter and upper subpectoral,
which close below lowest pectoral ray bases;
4 ventrals, equidistant; 1 supraventral, level
with upper subpectoral, and little before
first ventral photophore; 4 to 7 + 8 to 12 anals;
3 supraanals, usually in inclined line,

first opposite or little before third ventral spot, second little above first to which nearer than to third and little before or behind fourth ventral and at lower third to $2\frac{2}{5}$ in body depth little before first anteroanal; 1 posterolateral, little lower than uppermost supraanal and over fifth or sixth anteroanal; 2 precaudals, close set, posterior but little higher. Six large luminous supracaudal scales.

D. II or III, 8, I, first branched ray $1\frac{3}{4}$ to 2 in head; adipose fin $2\frac{2}{5}$ to $2\frac{7}{8}$; A. III, 15, I, first branched ray $2\frac{1}{8}$ to $2\frac{1}{5}$; caudal well emarginate; least depth of caudal peduncle $4\frac{7}{8}$ to 5; pectoral $1\frac{7}{8}$ to

to 2; ventral $2\frac{1}{3}$ to $2\frac{1}{2}$.

Deep dusky, with iridescent purplish, bluish and silvery reflections. Iris dull dark yellowish. Fins plain pale brown. Photophores black, with bright silvery centers. Supracaudals with dull yellowish.

Atlantic, Indian and Pacific Oceans.

51552 U.S.N.M.

3563

Albatross Collection 3932. Length 24 to 29 mm. 5 examples.

51553 U.S.N.M.

Albatross Collection 3912. Length 28 to 36 mm. 3 examples.

51554 U.S.N.M.

Albatross Collection 3980. Length 39 mm.

51555 U.S.N.M.

Albatross Collections 3930. Length 19 to 32 mm. 2 examples.

51556 U.S.N.M.

Albatross Collection 3929. Length 21 mm.

51574 U.S.N.M.

Albatross Collection 3926. Length 20 to 40 mm. 7 examples. Two with 6 supracaudal spots.

51575 U.S.N.M.

Albatross Collection

Length 23 mm.

51577 U.S.N.M.

Albatross Collection 3980. Length 20 to 32 mm.
13 examples.

51579 U.S.N.M.

Albatross Collection 4009. Length 23 mm.

74625 U.S.N.M.

Albatross Collection 4921. Length 17 mm.75803 U.S.N.M. N. $22^{\circ}10'$ W. $155^{\circ}35'45''$ Albatross Collection 3808. Length 34 mm.

7972 A.N.S.P. near the Hawaiian Islands.

Dr. W. H. Jones. Length 46 mm. Type of
Centrobranchus choerocephalus.and A.N.S.P. near the Hawaiian
Islands. Dr. W. H. Jones. Length to mm.
Paratypes of Centrobranchus choerocephalus.

Myctophum andreae (Lütken)

Scopelus (Rhinoscopelus) andreae

Lütken, Kon. Dansk. Vidensk.

Selsk. Skrift. Kjöbenhavn, ser. 6,

vol. 7, no. 6, 1892, p. 245, fig. 3.

Atlantic and Indian Oceans; ✓

Vidensk. Medd. Naturh. Foren. København,
1891, p. 209 (Jacobshavn).

(not uncommon in the collection of the
National Museum, mingled with
specimens identified by us with S.
Coccoi. It occurs in almost every lot,
and therefore a new list of localities
is not given). — Jordan and Evermann,
Bull. U. S. Nat. Mus., no. 47, pt. 1, 1896,
p. 569 (copied).

3565

Myctophum andreae (Lütken)
Scopelus (Rhinoscopelus) andreae
Lütken, Kon. Dansk. Vidensk.

Selsk. Skrift. Kjöbenhavn, ser. 6,
vol. 7, no. 6, 1892, p. 245, fig. 3.

Atlantic and Indian Oceans; ✓

Rhinoscopelus andreae Goode and
Bean, Oceanic Ichth., 1895, p. 90

("not uncommon in the collection of the
National Museum, mingled with
specimens identified by us with S.
Coccoi. It occurs in almost every lot,
and therefore a new list of localities
is not given"). — Jordan and Evermann,
Bull. U. S. Nat. Mus., no. 47, pt. 1, 1896,
p. 569 (copied).

Myctophum coccoi andreae Branner,
Zool. Anzeiger, vol. 28, Nr. 10, Dec.
20, 1904, p. 390 (diag. in key).

Myctophum (Myctophum) andreae
Branner, Deutsch. Tiefsee Exped.
Valdivia, vol. 5, Tiefsee-Fische, 1906,
p. 203, text fig. 122 (trunk) (Atlantic
Ocean; Bay of Bengal; west coast
of Sumatra; south of Ceylon). —

Jugmayer, Rés. Camp. Sci. Monaco,
vol. 35, 1911, p. 28 (N. $41^{\circ}40'$ E. 4° ,
2025 meters).

Myctophum andreae Parr, Proc. U.
S. Nat. Mus., vol. 76, 1929, p. 8 (type
of Centrobranchus gracillicauda).

— Fowler, Ocean. Pap. Bishop Mus.,
vol. 9, no. 18, Feb. 1932, p. 4 (corrected
reference).

3567

Centrobranchus andreae Gilbert,
Bull. Amer. Mus. Nat. Hist. New
York, vol. 30, art. 2, 1911, p.

Centrobranchus andrae Fowler, Mem.
Bishop Mus., vol. 10, 1928, p. 67
(Hawaiian Islands; error).

Centrobranchus gracilicaudus Gilbert,
Bull. U. S. Fish Comm., vol. 23, pt. 2,
1903 (1905), p. 595, pl. 69, fig. 2. West
of Nihoa; west of Oahu; southwest
of French Frigate Shoals; near
Laysan. — Jordan and Jordan, Mem.
Carnegie Mus., vol. 10, no. 1, 1922, p. 12
(reference).

Mystophum nigro-ocellatum (not
Günther) Parre, Bull. Bingham

Taaning, Vidensk. Medd. Dansk Naturh.
Foren. København, vol. 86, 1928, p. 55 (part).

3567

Centrobranchus andreae Gilbert,
Bull. Amer. Mus. Nat. Hist. New
York, vol. 30, art. 2, 1911, p.

Centrobranchus andrae Fowler, Mem.
Bishop Mus., vol. 10, 1928, p. 67
(Hawaiian Islands; error).

Centrobranchus gracilicaudus Gilbert,
Bull. U. S. Fish Comm., vol. 23, pt. 2,
1903 (1905), p. 595, pl. 69, fig. 2. West
of Nihoa; west of Oahu; southwest
of French Frigate Shoals; near
Laysan. — Jordan and Jordan, Mem.
Carnegie Mus., vol. 10, no. 1, 1922, p. 12
(reference).

Mystophum nigro-ocellatum (not
Münther) Parr, Bull. Bingham
Oceanogr. Collection, vol. 3, art. 3,
1928, p. 62 (part; compiled).

naturh. Foren. Köbenhavn, vol. 86, 1928,
52 (North Atlantic; mediterranean;
ignosis in key).—

29.4.84
1928
homos
Münch
my

Depth $4\frac{1}{5}$ to $4\frac{3}{5}$; head $3\frac{1}{4}$ to $3\frac{2}{3}$, width $2\frac{1}{4}$ to 3. Snout 4 to $4\frac{1}{4}$ in head; eye $3\frac{3}{4}$ to 4, greater to subequal with snout, greater than interorbital in young to subequal with age; maxillary not quite reaching well inclined hind preopercle edge, slender, length from snout tip $1\frac{1}{3}$ to $1\frac{2}{5}$ in head; interorbital $3\frac{1}{8}$ to $3\frac{1}{5}$, well convex. Gill rakers 3+4, short finely roughened spiny tubercles, greatly shorter than gill filaments, which $1\frac{1}{2}$ in eye.

Scales 33 to 37 in lateral line to caudal base, greatly enlarged and narrowly imbricated; 3 above, 3 below,

3569
13 to 15 predorsal. Front of dorsal
and anal bases, also caudal base;
scaly. Scales with 3 basal radiating
striae; circuli coarse basally, obsolete
apically.

Antorbital photophores small, as
upper well elevated at front eye edge
and lower low at lower front eye edge;
2 operculars, lower often veiled or
indistinct; 3 equidistant veiled
branchiostegals; 5 pectorals, second
interspace usually largest; 1 ^{pectoral}supraocular
close above origin of pectoral fin; 2
subpectorals, front or lower before
suprapectoral though little behind

second pectoral, upper close below lowest pectoral fin rays; 4 ventrals, equidistant; 1 supraventral about same level as upper subpectoral; 6 or 7 + 9 to 11 anals, usually most of posteroanals behind anal fin base; 3 supraanals, first or lowest over last ventral, second little higher and posterior and third slightly above middle of body or lateral line and anal fin origin; 1 posterolateral over last anteroanal slightly below middle in space below lateral line; 2 precaudals, close set, low.

D. III, 8, I, first branched ray $1\frac{1}{2}$ to $1\frac{3}{4}$ in head; adipose fin 2 to $2\frac{3}{4}$;

A. III, 15, I, first branched ray $1\frac{3}{4}$ to $2\frac{1}{4}$; caudal $1\frac{1}{5}$ to $1\frac{1}{4}$, forked; least depth of caudal peduncle $4\frac{1}{2}$ to $4\frac{4}{5}$; pectoral 2; ventral $2\frac{2}{5}$ to $2\frac{3}{4}$.

Back dark brown, sides and below paler with silvery white tinge and iridescent reflections. Iris white. Fins all pale.

Atlantic, Indian and Pacific Oceans.

D. 5186. Lusaran Light, N. 20° E.,
 37.80 miles (N. $9^{\circ} 53' 30''$ E. $122^{\circ} 15' 30''$),
 between Panay and Negros. March 30, 1908.
 Length 19 to 44 mm. 8 examples.

D. 5128. Hogas Island (W.), N. 6° E.,
 32.50 miles (N. $9^{\circ} 52' 10''$ E. $121^{\circ} 49' 35''$),
 Sulu Sea, vicinity southern Panay.
 February 4, 1908. Length 20 to 29 mm. 3 examples.

51518 U.S.N.M.

Albatross Collection 4145. Length 19 to 33 mm.

Types of Centrobranchus gracilicaudus.

51572 U.S.N.M.

Albatross Collection. Length 17 mm.

51573 U.S.N.M.

Albatross Collection. Length 28 mm.

51576 U.S.N.M.

3573

Albatross Collection

. Length 28 mm.

Myctophum orientalis (Gilbert)

Dasycopelus orientalis Gilbert, Mem. Carnegie Mus., vol. 6, no. 2, August 1913, p. 70, pl. 11, fig. 1. Misaki, Sagami Bay, Japan. —
Jordan and Thompson, Mem. Carnegie Mus., vol. 6, no. 4, 1914, p. 213 (type).

Myctophum orientalis Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 62 (note).

Depth $3\frac{1}{2}$ to $3\frac{2}{3}$; head $3\frac{1}{8}$ to $3\frac{1}{4}$, width $2\frac{1}{5}$ to $2\frac{1}{2}$. Snout $5\frac{1}{4}$ to $6\frac{1}{2}$ in head from snout tip; eye $2\frac{4}{5}$ to 3, greater than snout or interorbital; maxillary extends but little behind eye though not quite to vertical hind preopercle edge, slender,

length $1\frac{1}{2}$ to $1\frac{3}{5}$ in head from snout tip; interorbital $3\frac{2}{5}$ to $3\frac{1}{2}$, slightly convex. Gill rakers $4 + 14$ or 15 , lanceolate, subequal with gill filaments or about $\frac{1}{2}$ of eye.

Scales 32 or 33 in lateral line, not enlarged, tubes distinct; 3 above, 4 below, 10 or 11 predorsal to occiput.

Caudal scaly basally. Bases of dorsal and anal with scales anteriorly. Scales with 4 basal radiating striae; circuli rather coarse, somewhat obsolete apically.

One lower antorbital photophore, small, close along front eye edge; 2 operculars, upper larger, well above

3576

maxillary end and on inclined line
with lower eye edge and lower subpectoral;
3 equidistant veiled branchiostegals; 5
pectorals, third interspace shortest
and first and second subequally longest;
1 suprapectoral, close above and before
pectoral origin; 2 subpectorals, first or
lower over second pectoral photophore and
slightly nearer upper subpectoral than
first pectoral, also little before supraventral,
upper subpectoral close before lower
pectoral fin ray bases; 4 ventrals,
equidistant; 1 supraventral, midway
between lateral line and ventral fin
base; 6 to 8 + 2 to 4 anals, first

posteroanal above last anal ray base;
 3 supraanals, often nearly or quite in
 inclined line from last ventral, equidistant
 or 2 lower little closer and uppermost
 close below lateral line; 1 posterolateral,
 above or close behind last anteroanal,
 also close below lateral line; 2 precaudals,
 close set, low, posterior slightly higher.
 No supracaudal or infracaudal luminous
 scales.

D. III, 8, I, first branched ray $1\frac{1}{8}$ to $1\frac{1}{4}$
 in total head length; adipose fin $3\frac{2}{5}$
 to $3\frac{1}{2}$; A. III, 14 or 15, first branched ray
 2; caudal subequal with head, well
 forked; least depth of caudal peduncle

3; pectoral $1\frac{1}{4}$; ventral $1\frac{7}{8}$ to 2.

Brown to dusky where scales have fallen. Scales, sides of head and iris with silvery white reflections, also iridescent. Fins whitish.

Japan. Though Gilbert expressly mentions there are no luminous areas on the upper or lower surfaces of the caudal peduncle in any of the numerous adults of the collection, his figure shows a pale border both above and below along the edges of the caudal peduncle.

74670 U.S.N.M.

Albatross Collection 4954. Length 25 mm.

74671 U.S.N.M.

Albatross Collection 4955. Length 17 to 26 mm.

5 examples.

74672 U.S.N.M.

Albatross Collection 4921. Length 17 to 25 mm.

17 examples:

Myctophum pristilepis (Gilbert and Cramer)

Sasyrscopeles pristilepis Gilbert and Cramer,

Proc. U. S. Nat. Mus., vol. 19, 1896, p. 412,

pl. 39, fig. 1. N. Lat. $21^{\circ}15'49''$ W. Long. $157^{\circ}44'$

$27''$, off Hawaiian Islands). — Gilbert,

Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903

(1905), p. 600 (Honolulu; south of Lanai;

north of Molokai; west of Oahu; south of Bird

Island; south of French Frigates Shoal; near

Laysan; east of Kauai; west of Kauai); Mem.

Mus. Comp. Zool., vol. 26, no. 6, 1908, p. 220

(N. Lat. $1^{\circ}45'$ W. Long. $137^{\circ}36'$; S. Lat. $16^{\circ}39'$

W. Long. $149^{\circ}11'$). — Jordan and Jordan, Mem.

Carnegie Mus., vol. 10, no. 1, 1922, p. 10

(reference).

Myctophum pristilepis Brauer, Deutsch.
Tiefsee Exped. Valdivia, vol. 5, Tiefsee-Fische,
1906, p. 163 (diagnosis in key). — Gilbert,
Bull. Mus. Comp. Zool., vol. 46, no. 14, April
1906, p. 259, pl. 3 (Mauritius; Hawaii). —
Weber, Siboga Exped., vol. 57, Fische, 1913,
p. 88 (Macassar Strait, Halmahera and
Banda Seas, Kur Island, to 1000 meters).
— Weber and Beaufort, Fishes Indo
Austral. Archipelago, vol. 2, 1913, p. 165,
fig. 64 (Weber's materials). — Parr, Bull.
Bingham Oceanogr. Collection, vol. 3, art. 3,
Dec. 1928, p. 62 (note); Proc. U.S. Nat. Mus., vol.
76^{part. 10,}, 1929, p. 9 (type). — Fowler, Occas. Pap. Bishop
Mus., vol. 9, no. 18, Feb. 1932, p. 4 (reference).

? Scopelus brachygnathus Bleeker,
 Act. Soc. Sci. Ind. Néerland., no. 3,
 vol. 1, 1856, p. (6) 65. Manado, Celebes;
 Naturk. Tijdschr. Nederl. Indië, vol. 13,
 1857, p. 385 (Batjan); vol. 17, 1858-59, p.
 143 (Boeling, Bali).

Myctophum brachygnathus Bleeker,
 Atlas Ichth. Ind. Néerl., vol. 6, 1866-72,
 pl. (1) 277, fig. 3.

Myctophum (Dasyscopelus) asperum (not
Richardson) Bleeker, Atlas Ichth. Ind.
 Néerl., vol. 6, 1866-72, p. 159 (Bali,
 Celebes, Batjan).

Dasyscopelus asper Fowler, Mem. Bishop
 Mus., vol. 10, 1928, p. 67 (part).

~~Sta.~~ 5319D. $21^{\circ}31'N.$, $117^{\circ}53'E.$, China
Sea, vicinity of Formosa, in 40 fathoms
dredge cable out. November 5, 1908.

8 examples 16 to 23 mm.

Sta. 5227D. Point Orizon, $S44^{\circ}E.$,
18.30 miles ($12^{\circ}53'45''N.$, $121^{\circ}52'30''$
 $E.$), east of Mindoro, in 322 fathoms.

May 5, 1908. 5 examples 17 to 24 mm.

Sta. D. 5437. Hermana Mayor Light, N.
 $69^{\circ}E.$, 4.9 miles ($15^{\circ}45'54''N.$, $119^{\circ}42'$
 $45''E.$), west coast of Luzon.

May 8, 1909. 3 examples 12 to 16 mm.

Sta. D. 5120. Nombro Island, $S. 79^{\circ}$
 $30'E.$, 19.2 miles ($13^{\circ}45'30''N.$, 120°
 $30'15''E.$), Balayan Bay and Verde Island
Passage, in 393 fathoms. January 21, 1908. Length 13 mm.

? Myctophum pristilepis obtusirostre

Taaning, Vidensk. Medd. Dansk.

Naturhist. Foren. Kjöbenhavn, vol. 86,

1928, p. 54. North Atlantic.

Depth 4 to $4\frac{1}{4}$; head $3\frac{1}{3}$ to $3\frac{2}{3}$, width

2. Snout $5\frac{1}{2}$ to $6\frac{1}{3}$ in head from snout

tip; eye $2\frac{1}{5}$ to $2\frac{2}{5}$, greater than snout
or interorbital; maxillary extends little

beyond eye though not quite to vertical
preopercle edge, expansion $3\frac{1}{5}$ to $3\frac{1}{4}$

in eye, length $1\frac{1}{2}$ to $1\frac{3}{5}$ in head from

snout tip; interorbital 3 to $3\frac{1}{2}$, nearly

flat. Gill rakers $8 + 19$ to 22 , lanceolate,

$1\frac{3}{5}$ in eye, twice gill filaments.

Scales 36 or 37 in lateral line, scales enlarged; 3 above, 3 below, 12 or 13 predorsal to occiput. Large scales on cheeks and opercle. All fins more or less scaly. Ventral axil with large pointed scale. Scales ctenoid, firm, not spiniferous in lateral line. Scales with 3 to 5 basal radiating striae, circuli fine, obsolete apically.

Antorbital photophore small, ventral on front eye edge; 2 operculars, upper little larger, on line with lower eye edge and lower subpectoral photophore; 3 equidistant veiled branchiostegals; 5 pectorals, second and third closest;

Kjöbenhavn, vol. 86, 1928, p.

Dasy Scopelus asper ~~(not Richardson)~~

Fowler, Mem. Bishop Mus., vol. 10, 1928,
p. 67 (part; on Gilbert).

? Scopelus brachygnathus Bleeker, Act. Soc.
Sci. Ind. Néerl., no. 3, vol. 1, 1856, p.
(6) 65. Manado, Celebes; Naturk. Tijdschr.
Nederl. Indië, vol. 13, 1857, p. 385 (Batjan);
vol. 17, 1858-59, p. 143 (Boleling, Bali).

Myctophum brachygnathus Bleeker, Atlas
Ichth. Ind. Néerl., vol. 6, 1866-72, pl. (1) 277,
fig. 3.

(not Richardson)
Myctophum (Dasy Scopelus) asperum, Bleeker,
Atlas Ichth. Ind. Néerl., vol. 6, 1866-72, p.
159 (Bali, Celebes, Batjan).

1 suprapectoral, little above and before pectoral origin, much nearer latter than lateral line; 2 subpectorals, lower in line with suprapectoral and second ventral though much nearer latter than upper subpectoral, which close before bases of lowest pectoral rays; 4 ventrals, equidistant; 1 supraventral, midway to slightly lower in space between lateral line and ventral fin base; 8 to 10 + 3 to 5 anals; 3 supraanals, in slightly curved line with first or lowest little before fourth ventral, also closer to latter than to second supraanal, which midway nearly

between first supraanal and third or uppermost supraanal, which close below lateral line and opposite anal fin origin; 1 posterolateral above last anteroanal, close below lateral line; 2 close set precaudals, second slightly raised. Infracaudal luminous scales 3.

d. IV, 9 to III, 11, first branched ray $1\frac{2}{5}$ to $1\frac{3}{5}$ in head; adipose fin $3\frac{2}{5}$ to $3\frac{3}{4}$; a. III, 14 to III, 16, first branched ray about 2.2; caudal well forked; least depth of caudal peduncle $3\frac{1}{4}$ to $3\frac{1}{2}$; pectoral $1\frac{1}{4}$ to $1\frac{2}{5}$; ventral $2\frac{1}{8}$ to $2\frac{1}{4}$.

Brownish, upper surfaces where

scales have fallen darker. Sides of head and body silvery, with bright iridescent reflections, especially on scales. Snout pale or whitish. Fins all pale brown.

Indian and Pacific Oceans. A species greatly like Myctophum spinosum in some respects, especially its well scaled fins. The front of the dorsal and anal, as well as the caudal, largely covered with large scales, a fact not shown in Gilbert's figure or mentioned in his description. This is doubtless due to the condition of his specimens, as in most preserved materials they

have disappeared. He states of the scales "their edges strongly toothed, the teeth entirely absent or obsolescent on the scales of the lateral line."

This must, however, be a variable character as I find the scales of the lateral line with 6 to 10 strong marginal denticles. Other specimens are entirely with smooth edged scales.

There is truly little in Bleeker's description of Scopelus brachygnathus to identify it with the present species, though he gives D. II, 10 or II, 11, A. II, 16 or II, 17; depth $5\frac{1}{3}$ in total and head $4\frac{1}{2}$. This description is

based on 2 examples 50 and 65 mm.
The photophores are not described
though apparently inaccurately represented
in his subsequent colored plate as there
are 3 precaudals, anals 9 + 4, apparently
the 3 supraanals are intended with
the first opposite anal origin, second
midway between first anal and
lateral line and uppermost opposite
second anal and close below lateral
line; 2 ventrals? are shown on the same
level as the anals; 1 supraventral
little nearer ventral than lateral line;
2 subpectorals as usual; no supra-
pectoral or no posterolateral. The

3590
scales in the lateral line are but
little larger than the others.

Indian and Pacific Oceans.

The Atlantic form separated by
Jaenig as Myctophum pristilepis
obtusirostre.

Indent 5
Block style

3591

D. 5539. Apo Island (C.), N. 78° W.,
8.2 miles (N. $9^{\circ}3'20''$ W. $123^{\circ}24'45''$),
between Negros and Siquijor. August 19,
1909. Length 19 mm.

D. 5196. Capitanillo Light, N. $5^{\circ}30''$
W., 14.30 miles (N. $10^{\circ}44'30''$ E. $124^{\circ}7'30''$),
off northern Cebu. April 3, 1908.
Length 18 to 50 mm. 10 examples.

D. 5230. Limasawa (S.), S. 68° E., 22.
50 miles (N. $10^{\circ}1'50''$ E. $124^{\circ}42'30''$), between
Bohol and Leyte. In 118 fathoms. May 7,
1908. Length 15 to 23 mm. 4 examples.

D. 5186. Lusaran Light, N. 20° E., 37.80
miles (N. $9^{\circ}53'30''$ E. $122^{\circ}15'30''$), between
Panay and Negros. March 30, 1908. Length
29 to 83? mm. 2 examples.

3592

D. 5422. Lusaran Point Light, S. 80° E.,
9.7 miles (N. $10^{\circ} 31' 45''$ E. $122^{\circ} 18' 45''$),
between Panay and Guimaras. March
30, 1909. Length 19 mm.

D. 5649. North Island (S.), N. 87° E.,
22 miles (S. $5^{\circ} 36' 36''$ E. $122^{\circ} 7' 36''$), Buton
Strait. December 16, 1909. Length 44 to 47
mm. 3 examples.

D. 5227. Point Orizon, S. 44° E., 18.30
miles (N. $12^{\circ} 53' 45''$ E. $121^{\circ} 52' 30''$), east of
Mindoro. In 322 fathoms. May 5, 1908.
Length 29 to 49 mm. 2 examples.

47737 U.S. N.M.

Albatross Collection . Length 62 mm.
Type of dasycopeles pristilepis. Large

3593

lernean parasite on back close before
front and on right side.

51519 U.S.N.M. Honolulu market.

Albatross Collection . Length 77 mm.

51557 U.S.N.M.

Albatross Collection 4145. Length 15 to 19 mm.
13 examples.

51558 U.S.N.M.

Albatross Collection 4010. Length 15 to 19 mm.
6 examples.

51559 U.S.N.M.

Albatross Collection 3980. Length 19 to 38 mm.
5 examples.

51560 U.S.N.M.

Albatross Collection 3878. Length 20 mm.
2 examples.

D. 5196. Capitanillo Light, N. $5^{\circ}30'$
W., 14.30 miles ($10^{\circ}44'30''$ N., $124^{\circ}7'$
 $30''$ E.), off northern Cebu. April 3,
1908. Length 17 to 50? mm. 10 examples.

51561 U.S.N.M.

Albatross Collection 2732. Length 27 to 31 mm. 2 examples.

51562 U.S.N.M.

Albatross Collection 3912. Length 25 to 31 mm. 2 examples.

51563 U.S.N.M.

Albatross Collection . Length 16 to 19 mm. 7 examples.

51564 U.S.N.M.

Albatross Collection 3889. Length 20 mm.

51565 U.S.N.M.

Albatross Collection 3926. Length 16 to 23 mm. 5 examples.

75774 U.S.N.M. N. $1^{\circ}45'$ W. $37^{\circ}36'$.

Albatross Collection . Length 17 mm. September 9, 1899.

D. 5649. North Island (S.), N. 87°

(E., 22 miles ($5^{\circ} 36' 00''$ S., $122^{\circ} 7' 36''$
E.), Buton Strait. December 16, 1909.
Length 44 to 47 mm. 3 examples.

Triple space
indent 5
beginning of spaces
beginning of lines

Myctophum asperum Richardson

Myctophum asperum Richardson, Ichth.

Voy. Erebus and Terror, 1844-48, p. 41,

pl. 27, figs. 13-15. Locality unknown. —

Branner, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 390 (diagnosis in key).

(North Atlantic; diagnosis in key).

— Parr, Bull. Bingham Oceanogr.

Collection, vol. 3, art. 3, Dec. 1928, p. 63

(note). — Horman, Discovery Rep., vol. 2,

1930, p. 325 (type; type of Dasyscopelus

naufagus).

Triple space
indent 5
beginning & spaces
beginning & lines

3595

Myctophum asperum Richardson

Myctophum asperum Richardson, Ichth.

Voy. Erebus and Terror, 1844-48, p. 41,

pl. 27, figs. 13-15. Locality unknown. —

Taaning, Vidensk. Medd. Dansk naturh.

Foren. København, vol. 86, 1928, p. 54

(North Atlantic; diagnosis in key).

— Parr, Bull. Bingham Oceanogr.

Collection, vol. 3, art. 3, Dec. 1928, p. 63

(note). — Horman, Discovery Rep., vol. 2,

1930, p. 325 (type; type of dasy Scopelus

nanus).

(North)

L. nov.

Samoa

Feb. 27,

A small fish of the Indo Pacific, closely related to Pempherus, though with more normal fish like contour. I have not examined any of the species and the

Myctophum (Myctophum) asperum

Brauer, deutsch. Tiefsee Exped.

Valdivia, vol. 15, Tiefsee-Fische,

1906, p. 197, text fig. 115 (Steindachner's
specimen).

Scopelus asper Valenciennes, Hist. Nat.

Poiss., vol. 22, 1849, p. 454 (New

Ireland). — Günther, Cat. Fishes

Brit. Mus., vol. 5, 1864, p. 411 (type;

Gulf of Guinea).

Scopelus (Dasy Scopelus) asper Steindachner,
Sitz. Akad. Wiss. Wien, math.-naturwiss.
Classe, vol. 55, pt. 1, 1867, p. 589 (China Sea).

Dasy Scopelus asper Goode and Bean,
Oceanic Ichth., 1895, p. 92, pl. 28, fig. 106
(copied). — Gilbert, Mem. Mus. Comp. Zool.,
vol. 26, no. 6, 1908, p. 221 (N. Lat. $3^{\circ}28'$ W.
Long. $136^{\circ}54'$, about 700 miles north of
Marquesas Islands); Mem. Carnegie Mus.,
vol. 6, no. 2, 1913, p. 73 (N. Lat. 30° to 37° E. Long.
 129° to 142° , in 0 to 300 fathoms, off Japan).

— Fowler, Mem. Bishop Mus., vol. 10, 1928,
p. 67 (Hawaii material) — Borodin, Bull.
Vanderbilt Oceanogr. Mus., vol. 1, art. 1, 1928, p. 11 (Caribbean Sea).

Dasy Scopelus naufragus Waite, Records

Australian Mus., vol. 5 pt. 3, 1904, p. 154, pl. 18, fig. 3.
Lord Howe Island.

3598

Depth $4\frac{1}{2}$ to 5; head $3\frac{1}{2}$ to $3\frac{4}{5}$, width

2. Snout $5\frac{3}{4}$ to $6\frac{1}{2}$ in head; eye $2\frac{3}{5}$ to $2\frac{4}{5}$, greater than snout or interorbital; maxillary extends little behind eye but not to hind preopercle edge, expansion $3\frac{1}{5}$ in eye, length $1\frac{3}{5}$ to $1\frac{2}{3}$ in head; interorbital $2\frac{4}{5}$ to 3, nearly level. Gill rakers $5 + 10$, lanceolate, rather robust, $2\frac{1}{5}$ in eye; gill filaments $\frac{3}{5}$ of gill rakers.

Scales 36 or 37 in lateral line to caudal base, scales enlarged; 2 above, 3 below, 14 predorsal. Fins all more or less scaly. Scales with 4 basal radiating striae; 10 to 24 apical marginal denticles; circuli rather coarse, obsolete apically.

3599

Two small antorbitals close along front eye edge, one superior and other low; 2 operculars, upper much larger, in line with lower eye edge and lower or front subpectoral; 5 pectorals, equidistant; 1 ~~supra~~pectoral, above and before pectoral fin origin and little nearer lateral line; 2 subpectorals, first or lower on slightly inclined line with suprapectoral and second pectoral, upper close before lowest pectoral fin ray bases; 4 ventrals, equidistant; 1 supraventral, midway to little below in space between lateral line and ventral fin base; 7 or 8 + 6 anals, first 2

posteroanals over last anal fin ray bases; 3 supraanals, first or lowest little behind third ventral, second would form obtuse angle with first and third or uppermost little behind last ventral, uppermost close below lateral line opposite anal fin origin; 1 posterolateral above and little behind last anteroanal; 2 close set precaudals, low, posterior little higher. Male with supracaudal luminous scale.

D. III, 9, I, first branched ray $1\frac{3}{5}$ to $1\frac{2}{3}$ in head; adipose fin $2\frac{1}{5}$ to $4\frac{2}{3}$; A.

III, 14, I or III, 15, I, first branched ray $1\frac{4}{5}$ to 2; caudal subequal to little longer than

head; least depth of caudal peduncle
 $3\frac{1}{3}$ to 4; pectoral 1 to $1\frac{1}{8}$; ventral
 $1\frac{4}{5}$ to $1\frac{7}{8}$.

Brown, scale pockets darker. Sides
and lower surfaces silvery white with
metallic or iridescent reflections. Iris
white. Fins all whitish.

Atlantic and Pacific Oceans.

D. 5185. Lusaran Light, N. 23° E.,
25.50 miles (N. $10^{\circ}05'45''$ E. $122^{\circ}18'30''$),
between Panay and Negros. In 638
fathoms. March 30, 1908. Length 19 mm.

D. 5422. Lusaran Point Light, S. 80° E.,
9.7 miles (N. $10^{\circ}31'$ E. $122^{\circ}18'45''$), between
Panay and Guimaras. March 30, 1909.
Length 16 to 24 mm. 8 examples.

D. 5616. Tifore Island (C.) N. 62° W., 50
miles (N. $0^{\circ}36'00''$ E. $126^{\circ}52'20''$), Molucca
Passage. November 22, 1909. Length 36 mm.

74674 U. S. N. M.

Albatross Collection 4973. Length 82 mm.

74675 U. S. N. M.

Albatross Collection 4909. Length 23 mm.

74676 U.S.N.M.

3603

Albatross Collection 4921. Length 25 mm.

74677 U.S.N.M.

Albatross Collection 4910. Length 25 to 52 mm.

74678 U.S.N.M.

Albatross Collection 5052. Length 31 to 45 mm.

75773 U.S.N.M. N. $3^{\circ}28'$ W. $136^{\circ}54'$

Albatross Collection . Length 18 mm.

Sta. D. 5185. Lusaran Light, N.
23° E., 25.50 miles (10° 05' 45" N.,
122° 18' 30" E.), between Panay and
Negros, in 638 fathoms. March 30,
1908. Length ^{30 to} 30 mm. 2 examples.

Myctophum spinosum (Steindachner)

Scopelus spinosus Steindachner, Sitz. Ber.
Akad. Wiss. Wien, math.-naturw. Klasse,
vol. 55, 1867, p. 711, pl. 3, figs. 4-a. China.

— Lütken, Kon. Dansk. Vidensk. Selsk.

Skrift., Kjöbenhavn, ser. 6, vol. 7, No. 6, 1892,

p. 239, pl. 1, figs. 1-2 (N. $14^{\circ}11'W.$ $29^{\circ}32'$;

N. $9^{\circ}W.$ 22° ; N. $6^{\circ}22'W.$ 22° ; N. $5^{\circ}31'W.$ $23^{\circ}15'$;

N. $4^{\circ}W.$ 24° ; N. $3^{\circ}10'W.$ $20^{\circ}30'$; N. $3^{\circ}10'W.$ $27^{\circ}50'$;

N. $3^{\circ}9'W.$ $23^{\circ}11'$; S. $0^{\circ}4'W.$ 25° ; S. $2^{\circ}30'W.$ $16^{\circ}4'$;

S. $2^{\circ}W.$ $31^{\circ}30'$; S. $7^{\circ}6'W.$ $11^{\circ}30'$; S. $16^{\circ}8'E.$ $111^{\circ}50'$;

S. $13^{\circ}E.$ $103^{\circ}20'$).

Dasyopelus spinosus Goode and Bean,

Oceanic Ichth., 1895, p. 92 (compiled). —

Jordan and Evermann, Bull. U. S. Nat.

Myctophum (Myctophum) rissoi Brauer,
Deutsch. Tiefsee Exped. Valdivia, vol. 5,
Tiefsee-Fische, 1906, p. 170, text fig. 83
(between Seychelles and Zanzibar, in
2000 meters).

Myctophum rissoi Parr, Bull. Bingham
Oceanographical Collection, vol. 3, art. 3,
Dec. 1928, p. 58 (compiled). — Horman,
Discovery Rep., vol. 2, 1930, p. 320 ($S. 33^{\circ}53'$
 $45'' E. 9^{\circ}26'30''$, 1000 meters; $S. 33^{\circ}50'$ to
 $34^{\circ}13' E. 16^{\circ}04'$ to $15^{\circ}49'$, 350 to 400 meters;
 $S. 2^{\circ}43'30'' W. 00^{\circ}56'30''$, 125 to 175 meters).

Mus., no. 47, pt. 1, 1896, p. 575 (compiled).

— Gilbert, Bull. Bur. Fisher., vol. 23,
pt. 2, 1903 (1905), p. 599 (south of
Lanai; west of Oahu; west of Nihoa;
near Laysan; south of Oahu); Mem.

Mus. Comp. Zool., vol. 26, no. 6, 1908, p.

220 (N. $13^{\circ}32'$ W. $135^{\circ}40'$; N. $3^{\circ}28'$ W. $136^{\circ}54'$;

S. $15^{\circ}24'30''$ W. $147^{\circ}59'40''$; S. $16^{\circ}39'$ W. $149^{\circ}11'$);

Bull. Amer. Mus. Nat. Hist. New York,

vol. 30, art. 2, March 10, 1911, p. 15 (S. 1° W. 118°);

Mem. Carnegie Mus., vol. 6, no. 2, 1913, p.

73 (south of Kagoshima). — Jordan and
Jordan, Mem. Carnegie Mus., vol. 10, no. 1,
Dec. 1922, p. 11 (reference). — Fowler and

Ball, Bull. Bishop Mus., no. 26, 1925,
p. 7 (Wake Island). — Fowler, Mem.
Bishop Mus., vol. 10, 1928, p. 67 (Wake
Island material; Hawaii).

Myctophum spinosum Brauer, Zool.
Anzeiger, vol. 28, no. 10, Dec. 20, 1904,
p. 389 (diagnosis in key). — Weber,
Siboga Exped., vol. 57, Fische, 1913, p.
87 (Celebes Sea). — Weber and Beaufort,
Fishes Indo Austral. Archipelago,
vol. 2, 1913, p. 163 (Celebes material). —
Parr, Bull. Bingham Oceanogr. Collection,
vol. 3, art. 3, Dec. 1928, p. 63 (copied). —

Norman, Ann. Mag. Nat. Hist., ser. 10,
vol. 4, Nov. 1929, p. 514 (Zanzibar).

Myctophum (Myctophum) spinosum

Brauer, Deutsch. Tiefsee Exped. Valdivia,
vol. 15, Tiefsee Fische, 1906, p. 196, text
figs. 113 - 114 (north of New Zealand).

Scopelus asper (not Richardson) (Günther,
Fishes of Zanzibar, 1866, p. 116 (east
coast of Africa)).

? Myctophum selenops Taaning, Vidensk.
Medd. Dansk Naturh. Foren. København,
vol. 86, 1928, p. 54. North Atlantic;
diagnosis in key.

Depth 4 to $4\frac{1}{4}$; head 4 to $4\frac{1}{2}$, width $1\frac{3}{4}$ to $1\frac{7}{8}$. Snout 6 to $6\frac{1}{2}$ in head from snout tip; eye $2\frac{2}{3}$ to $2\frac{4}{5}$, greater snout or slightly greater than interorbital; maxillary reaches slightly behind eye though not quite to hind vertical preopercle edge, expansion 3 to $3\frac{1}{2}$ in eye, length $1\frac{1}{2}$ to $1\frac{4}{5}$ in head from snout tip; interorbital (low. $3\frac{4}{5}$ to 4,) Gill rakers ^{16 or} $8 + 17$, lanceolate, $1\frac{3}{4}$ in eye or twice gill filaments.

Scales 36 or 37 in lateral line, little smaller than adjacent scales; 3 above, 3 below, 13 predorsal to occiput. Vertical fins and pectorals all more or less

covered with small scales. Ventral with rounded or only very short axillary scale. Scales ctenoid, very firmly adherent. Scales with 5 basal radiating striae; apical denticles 14 or 15 along free edge; circuli moderate, obsolete apically.

A small upper antorbital photophore, also small lower one, both on front eye edge; 2 operculars, upper larger and on inclined line from lower eye edge and lower subpectoral; 3 equidistant veiled branchiostegals; 5 pectorals, equidistant or last 3 closer together; 1 suprapectoral, close above and before pectoral fin origin,

3610

or midway between latter and lateral
line; 2 subpectorals, upper close before
lowest pectoral rays; lower opposite
suprapectoral and second pectoral,

4 ventrals, equidistant; 1 supraventral,
midway between lateral line and first
ventral photophore; 6 to 8 + 5 to 8, anals,
all but first two posteroanals behind
anal fin base; 3 supraanals, in inclined
line from second ventral to uppermost
supraanal, first before fourth ventral or
over third ventral, second little higher
and over fourth ventral, third close
below lateral line opposite anal fin
origin or first anteroanal; 2 precaudals,

close together and posterior slightly higher. Male with 7 supracaudal luminous scales, female with 3 infracaudal.

D. IV, 9, I or IV, 10, I, first branched ray $1\frac{1}{4}$ to $1\frac{2}{5}$ in total head length; adipose fin $2\frac{1}{3}$ to $3\frac{1}{10}$; A. III, 16, I to III, 18, I, first branched ray $1\frac{2}{3}$ to $2\frac{1}{10}$; caudal $1\frac{1}{5}$ to $1\frac{1}{4}$, small, well forked; least depth of caudal peduncle $3\frac{1}{10}$ to $3\frac{1}{2}$; pectoral $1\frac{1}{10}$ to $1\frac{1}{4}$; ventral 2 to $2\frac{1}{2}$.

Dark neutral brown to blue or violet above, sides and below silvery white with iridescent reflections.

Iris silvery white. Fins pale to whitish.

Pacific and Indian Oceans.

Taaning separates the Atlantic form
as Myctophum selenops, "characterized
by the deep, short form; depth of
body only $3\frac{1}{2}$ times in total length.
without caudal fin. AD 7+3. V. 13-14.
A. 18-19."

D. 5530. Balicasag Island (C.), N. ³⁶¹³
32°E., 4.3 miles (N. 9°26'45"E. 123°38'30"),
between Siquijor and Bohol Islands.

August 11, 1909. Length 42 mm.

D. 5531. Balicasag Island (C.), N.
43°E., 4.2 miles (N. 9°27'30"E. 123°38').

August 11, 1909. Length 22 to 43 mm. 2 examples.

D. 5604. Bilatu (town), N. 26°W., 8.7
miles (N. 0°22'30"E. 122°42'30"), Gulf of
Tanimi, Celebes. November 15, 1909. Length 50 mm.

D. 5196. Capitanillo Light, N. 5°30'W.,
14.30 miles (N. 10°44'30"E. 124°7'30"),
off northern Cebu Island. April 3, 1908.
Length 21 to 39 mm. 4 examples.

D. 5653. Lamulu, S. 40° E., 18
miles ($4^{\circ} 27' 36''$ S., $121^{\circ} 16' 36''$ E.),
Gulf of Boni, Celebes, December
17, 1909. Length 14 to 25 mm. 14 examples.

D. 5227. Point Origon, S. 44° E.,
18.30 miles ($12^{\circ} 53' 45''$ N., $121^{\circ} 52' 30''$
E.), east of Mindoro, in 322 fathoms.
May 5, 1908. Length ~~33~~²¹ to 50 mm.
~~4~~⁴ examples.

D. 5228. Romblon Light, N. 3° E.,
6.25 miles ($12^{\circ} 29' 30''$ N., $122^{\circ} 15' 45''$ E.),
south of Romblon. May 5, 1908. Length
22 to 34 mm. 21 examples.

3614.

D. 5672. Dongala Light, S. 80° E., 54 miles (S. $0^{\circ} 29' 15''$ E. $118^{\circ} 51''$), Macassar Strait. December 30, 1909. Length 18 to 31 mm. 16 examples.

D. 5176. Escarceo Light, S. 57° E., 7 miles (N. $13^{\circ} 35' 15''$ E. $120^{\circ} 53' 20''$), Verde Island Passage. In 260 fathoms. March 24, 1908. Length 43 mm?

D. 5185. Lusaran Light, N. 23° E., 25.50 miles (N. $10^{\circ} 5' 45''$ E. $122^{\circ} 18' 30''$), between Panay and Negros. In 638 fathoms. March 30, 1908. Length 19 to 30 mm. 2 examples.

D. 5661. Mamuju Island (E.), S. 14° E., 18.5 miles (S. $2^{\circ} 19' 30''$ E. $118^{\circ} 50'$), Macassar Strait. December 29, 1909. Length 22 to 55 mm. 2 examples.

3614.

D. 5672. Dongala Light, S. 80° E., 54 miles (S. $0^{\circ} 29' 51''$ E. $118^{\circ} 51''$), Macassar Strait. December 30, 1909. Length 18 to 31 mm. 16 examples.

D. 5176. Escarceo Light, S. 57° E., 7 miles (N. $13^{\circ} 35' 15''$ E. $120^{\circ} 53' 20''$), Verde Island Passage. In 260 fathoms. March 24, 1908. Length 43 mm?

D. 5223. Malabrigo Light, W. 9.80 miles (N. $13^{\circ} 36'$ E. $121^{\circ} 25' 30''$), between Marinduque and Luzon. April 24, 1908. Length 57 mm.

D. 5669. Mamuju Island (E.), S. 14° E., 18.5 miles (S. $2^{\circ} 19' 30''$ E. $118^{\circ} 50'$), Macassar Strait. December 29, 1909. Length 22 to 55 mm. 2 examples.

D. 5669

and Lagen.

N. 13° 36' E.

D. 522

Longk 43

Myctophum boops Richardson, Ichth. Voy.

rebus and Terror, 1844-48, p. 39, pl. 27,

figs. 6-12. Sea between Australia and

New Zealand; Ichth. China Japan. 1846.

~~S.~~ D. 5232. Limasana Island (S.),
S. 69° E., 20.60 miles ($10^{\circ}00'45''$ N.,
 $124^{\circ}44'06''$ E.), between Bohol and
Leyte, May 7, 1908. Length 16 mm.

~~S.~~ D. 5120. Sombrero Island, S. 79°
30° E., 19.2 miles ($13^{\circ}45'30''$ N., $120^{\circ}30'15''$ E.), Balayan Bay and Verde
Island Passage, in 393 fathoms.
January 21, 1908. Length 14 mm.

D. 5258. Juraojirao Island (S.),
S. 75° W., 16.25 miles ($10^{\circ}27'45''$ N.,
 $122^{\circ}12'30''$ E.), off southern Panay.
June 2, 1908. Length 22 to 24 mm.
6 examples.

3615

D. 5125. Hogas Island (W.), S. 11° E.,
24 miles (N. $10^{\circ} 48'$ E. $121^{\circ} 48' 30''$), Sulu
Sea, vicinity of ^{southern} Panay. In 411 fathoms.
February 3, 1908.
Length 16 to 19 mm. 3 examples.

D. 5128. Hogas Island (W.), N. 6° E.,
32.50 miles (N. $9^{\circ} 52' 10''$ E. $121^{\circ} 49' 35''$).
February 4, 1908. Length 31 to 36 mm.
2 examples.

51566 U.S.N.M.

Albatross Collection (3930). Length 33 mm.

51567 U.S.N.M.

Albatross Collection (4009). Length 23 mm.

51568 U.S.N.M.

Albatross Collection (3980). Length 22 to 23 mm.
3 examples.

D. 5669. Mamuju Island (E.),
S. 14° E., 18.5 miles ($2^{\circ}19'30''$ S., 118°
 $50'00''$ E.), Macassar Strait.
December 29, 1909. Length 23 to 55 mm.

51569 U.S.N.M.

Albatross Collection (3926). Length 23 to 32 mm.

5 examples.

51570 U.S.N.M.

Albatross Collection (4145). Length 20 to 29 mm.

19 examples.

51571 U.S.N.M.

Albatross Collection (3878). Length 24 to 50 mm.

2 examples.

74673 U.S.N.M.

Albatross Collection (4921). Length 15 to 29 mm.

3 examples.

75770 U.S.N.M. N. $3^{\circ}28'$ W. $136^{\circ}54'$

Albatross Collection (). Length 19 to 20 mm.

4 examples.

3617

75771 U.S.N.M. S. $15^{\circ}24'30''$ W. $147^{\circ}59'$

40"

Albatross Collection (). Length 18 to

19 mm. 5 examples.

75772 U.S.N.M. N. $17^{\circ}32'$ W. $135^{\circ}40'$ Albatross Collection (). Length 17 to
18 mm. 2 examples.

Myctophum californiense Eigenmann
and Eigenmann

Myctophum californiense Eigenmann
and Eigenmann, Notes San Diego
Biol. Lab., no. 9, 1889, p. (1). Cortez
Banks, off San Diego, California.
— Jordan and Evermann, Bull. U. S.
Nat. Mus., no. 47, pt. 1, 1896, p. 572
(compiled). — Gilbert, Mem. Carnegie
Mus., vol. 6, no. 2, 1913, p. 78 (N. 43°
5' 30" E. 145° 57' 40", south of
Hokkaido; Sagami Bay). — Townsend
and Nichols, Bull. Amer. Mus. Nat.
Hist. New York, vol. 52, art. 1, May 16,
1925, p. 10 (south west of Santa
Barbara Islands, Lat. 34°, in 534
fathoms). — Parr, Bull. Bingham

Oceanogr. Collection, vol. 3, art. 3,
Dec. 1928, p. 64 (compiled); Proc. U. S.
Nat. Mus., vol. 76, 1929, p. 10, fig. 4 (type).
Myctophum humboldti (not Risso) Brauer,
Deutsch. Tiefsee Exped. Valdivia, vol. 15,
Tiefsee - Fische, 1906, p. 192 (part).

Depth $4\frac{3}{5}$ to $4\frac{9}{10}$; head $3\frac{3}{5}$ to $3\frac{3}{4}$,
width $1\frac{4}{5}$ to $2\frac{3}{5}$. Snout 5 to $6\frac{4}{5}$ in head
from snout tip; eye $3\frac{1}{8}$ to $3\frac{2}{5}$, greater than
snout, subequal with interorbital; maxillary
reaches back well beyond eye though not
quite opposite little inclined hind
preopercle edge, expansion $3\frac{1}{4}$ in eye,
length $1\frac{1}{2}$ in head from snout tip;
interorbital $3\frac{1}{8}$ to $3\frac{3}{5}$, convex. Gill

3620
rakers 6 to 8 + 14 to 17, lanceolate,
slender, subequal with gill filaments
or $1\frac{1}{3}$ to $1\frac{2}{5}$ in eye.

Scales 41 or 42 in lateral line to
caudal base, enlarged, tubes distinct;
3 above, 3 below, 13 predorsal to occiput.
Pectoral with pointed axillary scale
 $\frac{1}{6}$ of fin. Very small pointed scale in
ventral axil. Caudal base scaly. Scales
very caducous, mostly fallen. Scales with
6 basal radiating striae; circuli moderate,
more or less obsolete apically.

Small upper antorbital photophore
and little larger lower; 2 operculars,
upper larger and little below line from

lower eye edge and lower or first subpectoral, very small lower opercular close behind end of maxillary; 3 veiled equidistant branchiostegals; 5 pectorals, first interspace longest and third shortest; 1 suprapectoral, little below middle between lateral line and pectoral fin origin; 2 subpectorals, first or lower over second pectoral and nearer upper subpectoral than first pectoral, also slightly before suprapectoral; 5 ventrals, third well elevated or level with first or lower supraanal, over and little behind second ventral; 1 supraventral, over and little behind last pectoral or slightly

nearer ventral fin origin than lateral line; 7 or 8 + 8 to 10 anals, last ⁵ postero-anals behind ventral fin base; 2 supraanals, first or lower over last ventral and upper little posterior above and close below lateral line; 1 posterolateral, close below lateral line over and little behind last anteroanal; 2 precaudals, low, posterior little higher. Supracaudal luminous scales 5 to 7.

D. IV, 10, I, first branched ray $1\frac{1}{3}$ to $1\frac{1}{2}$? in total head length; adipose fin $2\frac{2}{3}$ to $3\frac{4}{5}$; A. III, 18, I or III, 19, I, first branched ray $1\frac{3}{5}$; caudal $1\frac{1}{8}$ to $1\frac{1}{5}$?, well forked; least depth of caudal

3623

peduncle 3 to $3\frac{4}{5}$; pectoral $1\frac{1}{8}$? to $1\frac{1}{3}$; ventral $1\frac{2}{3}$ to $1\frac{3}{4}$?

Brown, scale pockets dusky. Iris grayish, with pale or whitish luminous bodies. Fins more or less whitish.

Pacific Ocean.

41920 U.S. N.M. Cortez Banks, off San Diego, California. Dr. C. H. Eigenmann.
Length 84 mm. Type.

74658 U.S. N.M.

In 127 fathoms.

Albatross Collection 3034. October 1, 1906.
Length 117 mm.

3629

Myctophum humboldti (Risso)
Serpe humboldti Risso, Ichth. Nice, 1810,
p. 358, pl. 10, fig. 38. Nice.

Scopelus humbol. Risso, Mem. Accad. Sci.
Torino, vol. 25, 1820, p. 266, pl. 10, fig. 1.
(Nice) Risso, Hist. nat. Eur. Mérid., vol. 3, 1826, p. 467 (Nice). —
Scopelus humboldti Günther, Cat. Fishes Brit.
Mus., vol. 5, 1864, p. 407 (Atlantic). —

— Steindachner, Sitzb. Ber. Akad. Wiss. Wien, St.
Math. naturw. Klasse, vol. 57, 1868, p. 732
(Canary Islands). — Vinciguerra, Ann. Mus. Civ. Stor. Nat.
Genova, vol. 22, 1885, p. 461 (Genoa).

(Cocos Island, New Amsterdam, Zanzibar,
China Sea). — Collett, Res. Camp. Monaco,
vol. 10, 1896, p. 110 (Cape Finisterre). ✓

— Holt and Byrne, Rep. Agric. Techn. Instruct.
Ireland, Sci. Investig. 1910, no. 6 (1911), p. 12, fig. 2
(outline) (Irish Atlantic Slope, 602 to 630 fathoms).

(name on explanation to plate).

Scopelus humboldti Valenciennes, Règne

Myctophum humboldti (Risso) ³⁶²⁴
Serpe humboldti Risso, Ichth. Nice, 1810,
p. 358, pl. 10, fig. 38. Nice.

Scopelus humbol Risso, Mem. Accad. Sci.

Torino, vol. 25, 1820, p. 266, pl. 10, fig. 1.

(Nice)

Risso, Hist. Nat. Eur. Mérid., vol. 3, 1826, p. 467 (Nice). —

Scopelus humboldti Günther, Cat. Fishes Brit.

Mus., vol. 5, 1864, p. 407 (Atlantic). —

Lütken, Kon. Dansk. Vidensk. Selsk. Skrift.

Kjöbenhavn, ser. 6, vol. 7, 1892, p. 254, fig. 12

(Cocos Island, New Amsterdam, Zanzibar,

China Sea). — Collett, Res. Camp. Monaco,
vol. 10, 1896, p. 110 (Cape Finisterre). ✓

Scopelus humboldtius Valenciennes, Règne

Animal Cuvier, Illustr. Poiss., 1839, pl. 103

(name on explanation to plate).

Scopelus humboldti Valenciennes, Règne

if your requirements are for one stop watch or a
hundred we will gladly send you a copy and assist
you in any way we can.

Our business is specializing in stop watches and we
feel that our becoming acquainted will be mutually
advantageous.

Thank you

→
Lütken, K.

Kjöbenhavn

(Cocor Ist

China Sea
vol. 10, 1896,

Scopelus h

Animal Cu

(name on

Animal Cuvier, Illustr. Poiss., 1839, pl.
~~Ann. Mus. Civ. Genova, vol. 22, 1885, p. 461 (Genoa);~~
 103, fig. 2. — Vinciguerra, Atti Soc. Ital.
 Sci. Nat., vol. 34, 1892, p. 329 (Canaries).
Myctophum humboldti Goode and Bean,
 Oceanic Ichth., 1895, p. 73, pl. 22, fig. 82
 (Atlantic materials).

Myctophum (Myctophum) humboldti
Brauer, Deutsch. Tiefsee Exped. Valdivia,
 vol. 15, Tiefsee - Fische, 1906, p. 192, text figs.
 108-111 (^{Canaries;} between Cocos Island and Sumatra;
 between Maldives and Chagos Islands;
 between Chagos Islands and Seychelles;
 between Seychelles and Zanzibar). — Murray and
Thoirs, The Depths of the Ocean, 1912, p. 613 (off Morocco; south west of Azores).
Barnard, Ann. South African Mus.,
 vol. 21, pt. 1, June 1925, p. 243, pl. 9, fig. 7
 (off Cape Point and East London, to 470 fathoms).

Myctophum humboldti Gilbert, Bull.
 — Brauer, Zool. Anzeiger, vol. 28, nr. 10,
 Dec. 20, 1904, p. 389 (diagnosis in key). —

Mus. Nat. Hist. New York, vol. 30, art. 2,
 March 10, 1911, p. 14 (off Chile). — Waite,
 Records Canterbury Mus., vol. 1, pt. 3, 1911,
 p. 166, pl. 27, fig. 3 (

— Taaning, Rep. Danish Oceanogr. Exped.
 Mediterranean, no. 5, 1918, p. 63, figs. 21-
 22 (Mediterranean, Messina, Atlantic);
 Vidensk. Medd. Dansk Naturh. Foren. København, vol. 86, 1928, p. 54 (diagnosis in key).
 — Parr, Bull. Bingham Oceanogr. Collection,
 vol. 3, art. 3, Dec. 1928, p. 64 (compiled).

Myctophum humboldti Gilbert, Bull.

Mus. Comp. Zool., vol. 46, no. 14, April 1906,
p. 260 (voyage from China); Bull. Amer.

Mus. Nat. Hist. New York, vol. 30, art. 2,

March 10, 1911, p. 14 (off Chile). — Waite,

Records Canterbury Mus., vol. 1, pt. 3, 1911,

p. 166, pl. 27, fig. 3 ().

— Taaning, Rep. Danish Oceanogr. Exped.

Mediterranean, no. 5, 1918, p. 63, figs. 21-

22 (Mediterranean, Messina, Atlantic);

Vidensk. Medd. Dansk Naturh. Foren. København, vol. 86, 1928, p. 54 (diagnosis in text).

— Parr, Bull. Bingham Oceanogr. Collection,

vol. 3, art. 3, Dec. 1928, p. 64 (compiled).

Pappenheim, Deutsch. Südpolar-Exp.
vol. 15. Zool. Bt. 7 No. 2 1914 p. 192.

~~Myclap
Mus. Camp.
p. 260 (very
Mus. ha
ch~~

— Horman, Discovery Rep., vol. 2, 1930,
p. 325 (S. $43^{\circ}20'$ W. $46^{\circ}02'$, 2000 meters;
S. $33^{\circ}53'45''$ E. $9^{\circ}26'30''$, 1000 meters;
S. $33^{\circ}20'$ to $33^{\circ}46'$ E. $15^{\circ}18'$ to $15^{\circ}08'$, 625
to 675 meters).

3628

Myctophum boops Richardson, Ichth.
Voy. Erebus and Terror, 1844-48, p. 39, pl.
27, figs. 6-12. Sea between Australia and
New Zealand; Ichth. China Japan, 1846,
p. 302 (seas of China). — Waite, Records
Australian Mus., vol. 1, no. 1, April 25, 1907,
p. 13 (reference).

Scopelus boops Valenciennes, Hist. nat.
Poiss., vol. 22, 1849, p. 451 (compiled).
— Günther, Cat. Fishes Brit. Mus., vol. 5,
1864, p. 408 (type; Vancouver Island). —
Macleay, Proc. Linn. Soc. New South Wales,
vol. 6, 1881, p. 223 (compiled).

Scopelus veranyi Moreau, Bull. Soc.
Philomath., Paris, ser. 7, vol. 12, 1888, p.
108. Nice. — Carus, Prodr. Faun. Medit.,
vol. 2, 1893, p. 563 (compiled).

Stylophthalmus mediterraneus Mazzarelli,
Revist. mens. Pesca, Pavia, vol. 5, 1910, p.

Depth $4\frac{1}{4}$ to 5; head $3\frac{1}{2}$ to $3\frac{2}{3}$, width
 $2\frac{1}{8}$ to $2\frac{1}{5}$. Snout 5 to $5\frac{2}{3}$ in head;
eye $3\frac{1}{10}$ to $3\frac{1}{5}$, greater than snout,
greater than interorbital to subequal with
age; maxillary reaches well beyond eye
though not to little inclined hind
preopercle edge, expansion $3\frac{1}{5}$ to $3\frac{1}{2}$
in eye, length $1\frac{1}{2}$ to $1\frac{3}{5}$ in head;

interorbital $3\frac{1}{4}$ to $3\frac{2}{5}$, low, very slightly and broadly convex. Gill rakers $5 + 13$ to 15 , lanceolate, $1\frac{1}{2}$ in eye, equal gill filaments.

Scales 38 to 40 in lateral line; 3 above, 3 or 4 below, 13 or 14 predorsal to occiput. Apparently no enlarged axillary ventral scale. Caudal base scaly. Scales with 4 or 5 basal radiating striae and 5 or 6 short weak apical marginals; circuli very fine, obsolete apically.

Two small antorbital photophores, upper above level of upper pupil edge, lower larger and below level of lower

pupil edge; 2 operculars, upper
larger and nearly level with lower
eye edge and upper subpectoral;
3 equidistant veiled branchiostegals;
5 pectorals, last before ventral fin
origin, third interspace shortest;
1 suprapectoral, little before pectoral
fin origin and midway to lower third
in space between pectoral fin origin
and lateral line; 2 subpectorals,
~~first or lower~~ well forward opposite
to little anterior from second pectoral
photophore, upper close before lowest
pectoral rays; 4 equidistant ventrals;
1 supraventral, little nearer to

p. 13 (reference).

Scopelus boops Valenciennes, Hist. Nat.

Poiss., vol. 22, 1849, p. 451 ().

— Günther, Cat. Fishes Brit. Mus., vol. 5,

1864, p. 408 (type; Vancouver Island). —

Macleay, Proc. Linn. Soc. New South Wales,

vol. 6, 1881, p. 223 (compiled).

Stylophthalmus mediterraneus mazzarelli;

Revist. mens. Pesca, Pavia, vol. 5, 1910, p.

midway between last pectoral spot
and lateral line; 8 + 7 or 8, most
posteroanals behind anal fin base;
3 supraanals, first and second nearly
on same slightly inclined line with
supraventral, first over second
ventral spot, second over fourth ventral
spot or even behind third ventral
spot, uppermost still little posterior
close below lateral line; 1 posterolateral,
over or little before last anteroanal
spot and close below lateral line; 2
precaudals, close, posterior little elevated.
Supracaudal luminous scales 1 or 2,
close before caudal, or 2 supracaudal

and 2 infracaudal.

D. IV, 10, first branched ray $1\frac{1}{2}$ in head; adipose fin 3 to $3\frac{1}{8}$; A. III, 17, I to III, 20, first branched ray 2 to $2\frac{4}{5}$?; caudal $1\frac{1}{2}$?, well forked; least depth of caudal peduncle $2\frac{1}{3}$ to $3\frac{2}{5}$; pectoral $1\frac{2}{5}$ to $1\frac{2}{3}$; ventral $1\frac{3}{4}$ to 2.

Brown, skin pockets all darker or dusky. Scales silvery or with iridescent tints. Caudal base dusky. Inside mouth dusky. Fins all pale brown.

Atlantic, Pacific and Indian Oceans.

The anal photophores vary 7 to 9 + 4 to 9.

Taaning gives the vertebrae 37 to 40.

40066 U.S.N.M. Rice. Florence

Museum. Length 140 mm.

43772 U.S.N.M. N. $36^{\circ}35'W$. $74^{\circ}03'$.

Bureau of Fisheries. Length 83 mm.

49380 U.S.N.M. Rice. M. Bellotti.

Length 108 mm.

Myctophum evermanni Gilbert

Myctophum evermanni Gilbert, Bull. U.
S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p.
597, pl. 70, fig. 2. South of Oahu; off
Lanai; Nihoa; Laysan; ~~Christmas~~ Mem.
Mus. Comp. Zool., vol. 26, no. 6, 1908, p. 218
(N. Lat. 5° - 17° W. Long. 135° - 137° ; S. Lat.
 $16^{\circ} 19'$ W. Long. $148^{\circ} 11'$; Marquesas Islands);
Mem. Carnegie Mus., vol. 6, no. 2, 1913, p.
80 (off southern Japan). — Weber, Siboga
Exped., vol. 57, Fische, 1913, p. 87
(Halmahera Sea, Manipa Strait; Banda
Sea, to 1000 meters). — Weber and Beaufort,
Fishes Indo Austral. Archipelago, vol. 2,
1913, p. 162, fig. 63 (tail) (Weber's materials).

- Jordan and Jordan, Mem. Carnegie Mus., vol. 10, no. 1, Dec. 1922, p. 11 (reference).
- Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 65 (compiled). —
- Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 70 (Hawaiian Islands). — Parr, Proc. U. S. Nat. Mus., vol. 76, 1929, p. 10 (type). —
- Norman, Ann. Mag. Nat. Hist., ser. 10, vol. 4, Nov. 1929, p. 514 (between Admiralty Island and Papua).

Myctophum caninianum (not Valenciennes)
Wünther, Rep. Voy. Challenger, vol. 31, pt. 2, 1889, p. 370 (neighborhood of New Guinea; passage to Admiralty Islands).

Depth $4\frac{1}{2}$ to $5\frac{1}{8}$; head $3\frac{1}{8}$ to $3\frac{1}{3}$, width $2\frac{1}{2}$ to $2\frac{3}{5}$. Snout $4\frac{2}{3}$ to $5\frac{3}{5}$ in head; eye $3\frac{1}{3}$ to $3\frac{1}{2}$, greater than snout or interorbital; maxillary reaches well beyond eye, not quite to well inclined hind preopercle edge, expansion $2\frac{1}{4}$ to $2\frac{1}{3}$ in eye, length $1\frac{2}{5}$ in head; interorbital $3\frac{1}{4}$ to $3\frac{2}{3}$, low or but slightly convex. Gill rakers $8+14$, lanceolate, $1\frac{2}{3}$ in eye, equal gill filaments.

Scales 38 or 39 in lateral line, scarcely enlarged; 4 above, 5 below. Caudal base scaly. Scales with 5 basal radiating striae; circuli coarse, obsolete apically.

One antorbital photophore level with

Myctophum cuvieri (Castelnau)

Scopelus cuvieri Castelnau, Proc. Zool.
Acclimatiz. Soc. Victoria, vol. 2, 1873, p. 106.
Knob Island, Torres Strait. — Macleay,
Proc. Linn. Soc. New South Wales, vol. 6,
1881, p. 222 (copied). —

~~Scopelus (~~Dasy Scopelus~~) cuvieri Lütken~~,
Kon. Dansk. Vidensk. Selsk. Skrift.

Kjöbenhavn, ser. 6, vol. 7, 1892, p. 242 (type).

~~Dasy Scopelus cuvieri Waite~~, Records Australian
Mus., vol. 5, 190⁴, p. 156 (note on type).

Myctophum cuvieri Parr, Bull. Bingham
Oceanogr. Collection, vol. 3, art. 3, Dec. 1928,
p. 59 (note).

lower pupil edge; 2 operculars, close behind preopercle edge, upper much larger, lower veiled; 3 large veiled equidistant branchiostegals; 5 pectorals, third and fourth closest; 1 suprapectoral, midway between but advanced from pectoral origin and lateral line; 2 subpectorals, first or lower nearer second pectoral photophore from which little advanced, also before suprapectoral; upper subpectoral close before lowest pectoral rays; 4 ventrals, equidistant; 1 supraventral, nearly level with pectoral fin origin; 7 to 9 + 4 to 6 anals, of posteroanals first close behind last

3239

anal ray base; 3 supraanals, first and second at same level and also level with upper subpectoral, first also little behind second ventral and second little behind fourth ventral and third close below lateral line opposite anal origin; 1 posterolateral, above and posteriorly from last anteroanal close below lateral line; 2 close set precaudals close to lower edge of tail or only hind one little higher.

D. IV, 10, I, first branched ray $1\frac{1}{4}$ to $1\frac{2}{3}$ in head; adipose fin $2\frac{3}{4}$ to 3;

A. III, 16, I, first branched ray $1\frac{3}{5}$ to $2\frac{1}{3}$; caudal $1\frac{1}{3}$?, well forked; least depth

of caudal peduncle 4; pectoral 3,
not reaching supraventral photophore
or half of depressed ventral fin; ventral
 $1\frac{3}{5}$ to 2 in head, not quite or reaching
anal.

Color brownish where scales have
fallen. Head and scales with silvery
sheen. Fins whitish, bases of caudal
lobes black.

East Indies, Japan, Polynesia. The
anal photophores are quite characteristic,
in combination with other features, as
the posteroanals begin behind the base
of the last anal ray.

D. 5604. Bilatu (town), N. 26° W.,
8.7 miles (N. $0^{\circ} 22' 30''$ E. $122^{\circ} 42' 30''$),
Gulf of Tomini, Celebes. November 15,
1909. Length 21 to 35 mm. 53 examples.

D. 5196. Capitanillo Light, N. $5^{\circ} 30'$ W.,
14.30 miles (N. $10^{\circ} 44' 30''$ E. $124^{\circ} 07' 30''$), off
northern Cebu. April 3, 1908. Length
24 to 28 mm. 22 examples.

D. 5672. Davao Light S. 20° E.

D. 5176. Escarceo Light, S. 57° E., 7 miles (N.
 $13^{\circ} 35' 15''$ E. $120^{\circ} 53' 20''$), Verde Island
Passage. In 260 fathoms. March 24, 1908.
Length 20 to 22 mm, 17 examples. Very poor.

D. 5258. Juraojurao Island (S.), S. 75° W.,
16.25 miles (N. $10^{\circ} 27' 45''$ E. $122^{\circ} 12' 30''$), off
Southern Panay. June 2, 1908. Length 23 to 45 mm,
8 examples.

D. 5604. Bilatu (town), N. 26° W.,
8.7 miles (N. $0^{\circ} 22' 30''$ E. $122^{\circ} 42' 30''$),
Gulf of Tomini, Celebes. November 15,
1909. Length 21 to 35 mm. 53 examples.

D. 5196. Capitanillo Light, N. $5^{\circ} 30'$ W.,
14.30 miles (N. $10^{\circ} 44' 30''$ E. $124^{\circ} 07' 30''$), off
northern Cebu. April 3, 1908. Length
24 to 28 mm. 22 examples.

D. 5672. Sangala Light, S. 80° E., 54
miles (S. $0^{\circ} 29' 00''$ E. $118^{\circ} 51' 00''$), Macassar
Strait. December 29, 1909. Length 20 to 33
mm. 12 examples.

D. 5258. Juraojurao Island (S.), S. 75° W.,
16.25 miles (N. $10^{\circ} 27' 45''$ E. $122^{\circ} 12' 30''$), off
Southern Panay. June 2, 1908. Length 23 to 45 mm.
8 examples.

D. 5128. Hogas Island (W.), N. 6° E.,
32.50 miles (N. $9^{\circ}52'10''$ E. $121^{\circ}49'35''$),
Sulu Sea, vicinity southern Panay. February
4, 1908. Length 20 to 29 mm. 9 examples.

D. 5669. Mamuju Island (W.), S. 14° E.,
18.5 miles (S. $2^{\circ}19'30''$ E. $118^{\circ}50'00''$),

Macassar Strait. December 29, 1909.

Length 25 mm.

51521 U.S.N.M.

Albatross Collection 3980. Length 27 mm.
Type.

51522 U.S.N.M.

Albatross Collection 3980. Length 23 to 25 mm.
2 examples.

51523 U.S.N.M.

Albatross Collection 3926. Length 24 to 27 mm.
4 examples.

D. 5604. Bilau (town), N. 26° W.,
8.7 miles ($0^{\circ} 22' 30''$ N., $122^{\circ} 42' 30''$
E.), Gulf of Tomini, Celebes.
November 15, 1909. Length 21 to 35 mm.

53 examples.

D. 5258. Juraojirao Island (S.), S.
 75° W., 16.25 miles ($10^{\circ} 27' 45''$ N., 122°
 $12' 30''$ E.), off southern Panay.

June 2, 1908. Length 23 to 45 mm.

7 examples.

74657 U.S.N.M.

Albatross Collection 4921. Length 16 to 25 mm.
12 examples.

75780 U.S.N.M. N. $5^{\circ}40'$ W. $136^{\circ}47'$

Albatross Collection. Length 25 mm. 2 examples.

75781 U.S.N.M. N. $10^{\circ}57'35''$ W. $137^{\circ}35'25''$

Albatross Collection. Length 24 mm.

75782 U.S.N.M. N. $17^{\circ}32'$ W. $135^{\circ}40'$

Albatross Collection. Length 19 to 22 mm.
5 examples.

75783 U.S.N.M. N. $8^{\circ}00'$ W. $79^{\circ}33'$

Albatross Collection 4625. Length 37 mm.

75784 U.S.N.M. S. $0^{\circ}40'$ W. $88^{\circ}11'$

Albatross Collection 4640. Length 23 to 38 mm.
11 examples.

~~D.~~ D. 5669. ^{am} In₁uju Island (F.),
S. 14° E., 18.5 miles ($2^{\circ}19'30''$ S., 118°
 $50'00''$ E.), Macassar Strait.

December 29, 1909. Length 26 mm.

~~D.~~ D. 5196. Capitanillo Light, N. 5°
 $30'$ W., 14.30 miles ($10^{\circ}44'30''$ N., $124^{\circ}7'$
 $30''$ E.), off northern Cebu. April 3, 1908.

^{Length}
~~23 to 28 mm.~~ 23 to 28 mm. 22 examples.

D. 5128. Hogas Island (W.), N. 6° E.,
32.50 miles ($9^{\circ}52'10''$ N., $121^{\circ}49'35''$
E.), Sulu Sea, vicinity southern
Panay. February 4, 1908. Length 21
to 29 mm. 9 examples.

75785 U.S.N.M. S. $2^{\circ}13'$ W. $89^{\circ}42'$

Albatross Collection 4644. Length 23 to 27 mm.
3 examples.

75786 U.S.N.M. S. $4^{\circ}02'$ W. $89^{\circ}16'$

Albatross Collection 4646. Length 23 mm.

75787 U.S.N.M. S. $11^{\circ}30'$ W. $87^{\circ}19'$

Albatross Collection 4664. Length 35 to 36 mm.
3 examples.

75788 U.S.N.M. S. $16^{\circ}55'$ W. $100^{\circ}25'$

Albatross Collection 4704. Length 33 mm.

75789 U.S.N.M. S. $9^{\circ}30'$ W. $95^{\circ}08'$

Albatross Collection 4710. Length 25 to 32 mm.
5 examples, all in poor condition.

75790 U.S.N.M. S. $5^{\circ}11'$ W. $98^{\circ}56'$

Albatross Collection 4717. Length 22 mm.

75791 U.S.N.M. S. $5^{\circ}32'30''$ W. $99^{\circ}32'$

Albatross Collection 4718. Length 61mm.

Myctophum rufinum Taaning

Myctophum rufinum Taaning,

Vidensk. Medd. Dansk Naturh. Foren.

Köbenhavn, vol. 86, 1928, p. 54. North

Atlantic. — Parr, Bull. Bingham

Oceanogr. Collection, vol. 3, art. 3, 1928,

p. 65 (compiled).

Snout little protruded over lower jaw.

Scales cycloid.

Pectoral photophores at same level; suprapectoral above pectoral origin; anals in 2 groups, 8 or 9 + 5 to 7; supraanals in right or nearly right angle, first above third ventral or slightly advanced; 1 posterolateral. Supracaudal lateral plates extend from second dorsal to caudal in adult male.

D. 14 or 15; A. 19 to 21, space from anal origin to caudal less than space from eye center to anal and last anal ray in line passing through first and second posteroanals.

(Jaanning.)

North Atlantic: Related to Myctophum evermanni

no photophores above lateral
line.

3648

Myctophum aurolateratum Garman

Myctophum aurolateratum Garman,

Mem. Mus. Comp. Zool., vol. 24, 1899, p. 264,

pl. 55, fig. 3. N. $6^{\circ}21'$ W. $80^{\circ}41'$, surface. —

Brauer, Deutsch. Tiefsee Exped. Valdivia.

Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 389 (diagnosis in key);

in key). — Farr, Bull. Bingham Oceanogr.

Collection, vol. 3, art. 3, 1928, p. 65 (diagnosis

in key).

Depth $4\frac{7}{8}$ to 5; head $3\frac{1}{5}$ to $3\frac{1}{4}$, width $2\frac{1}{5}$ to $2\frac{1}{4}$. Snout $6\frac{1}{4}$ to 7 in head; eye $3\frac{1}{4}$ to $3\frac{1}{2}$, greater than snout or interorbital; maxillary reaches $\frac{1}{2}$ to $\frac{3}{5}$ eye diameter behind eye though not quite to little inclined hind preopercle

Myctophum aurolateratum Garman

Myctophum aurolateratum Garman,

Mem. Mus. Comp. Zool., vol. 24, 1899, p. 264,

pl. 55, fig. 3. N. $6^{\circ} 21'$ W. $80^{\circ} 41'$, surface. —

Brauer, Deutsch. Tiefsee Exped. Valdivia,

vol. 5, Tiefsee-Fische, 1906, p. 162 (diagnosis

in key). — Parr, Bull. Bingham Oceanogr.

Collection, vol. 3, art. 3, 1928, p. 65 (diagnosis

in key).

Depth $4\frac{7}{8}$ to 5; head $3\frac{1}{5}$ to $3\frac{1}{4}$, width $2\frac{1}{5}$ to $2\frac{1}{4}$. Snout $6\frac{1}{4}$ to 7 in head; eye $3\frac{1}{4}$ to $3\frac{1}{2}$, greater than snout or interorbital; maxillary reaches $\frac{1}{2}$ to $\frac{3}{5}$ eye diameter behind eye though not quite to little inclined hind preopercle

Usually small scales on cheek.
Dorsal with 4 or 5 scales.

Branner, v.

vol. 5, p. 11

in (see)

edge, slender, length $1\frac{2}{3}$ to $1\frac{3}{4}$ in head; interorbital $3\frac{2}{5}$ to 4, low, slightly convex. Gill rakers $6+12$, slender, lanceolate, $1\frac{2}{5}$ in eye; gill filaments $\frac{3}{5}$ gill rakers.

Scales 37 to 39 in lateral line to caudal base, not enlarged; 3 above, 4 below, 14 predorsal to occiput. Ventral axillary scale $\frac{1}{4}$ in fin. Caudal base scaly. Scales with 2 basal radiating striae; circuli fine, complete.

Small antorbital photophore little inferior on front eye edge; 2 operculars, upper much larger and on line from eye passing between subpectorals, lower